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INVESTMENT IN THE NATION'S AIR TRANSPORTATION SYSTEM

HEARING

BEFORE THE

JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

ONE HUNDREDTH CONGRESS

FIRST SESSION

OCTOBER 2, 1987

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CONTENTS

WITNESSES AND STATEMENTS

FRIDAY, OCTOBER 2, 1987

	Page
Sarbanes, Hon. Paul S., chairman of the Joint Economic Committee: Opening statement	1
Murphy, James T., vice president, airspace and airports, Air Transport Association of America	7
Baker, John L., president, Aircraft Owners & Pilots Association	18
Judy, Richard H., chairman, Aviation Infrastructure Roundtable	32
Mudge, Richard R., vice president, Apogee Research, Inc	47
Aaronson, Robert J., first vice chairman, Airport Operators Council International, and aviation director, Port Authority of New York and New Jersey	87
Mathison, Theodore E., State aviation administrator, Maryland Department of Transportation	117
Dickerson, J. Spencer, vice president, American Association of Airport Executives	129

SUBMISSIONS FOR THE RECORD

FRIDAY, OCTOBER 2, 1987

Aaronson, Robert J.: Prepared statement, together with attachments	93
Baker, John L.: Prepared statement	22
D'Amato, Hon. Alfonso M., member of the Joint Economic Committee: Written opening statement	4
Hallisay, Paul, director, legislative affairs, Air Line Pilots Association: Letter, dated November 2, 1987, to Senator Sarbanes submitting an attached statement	139
Judy, Richard H.: Prepared statement	36
Mathison, Theodore E.: Prepared statement	121
Mudge, Richard R.: Prepared statement	52
Murphy, James T.: Prepared statement	11
Scheuer, Hon. James H., member of the Joint Economic Committee: Exchange of letters with Hon. James C. Miller III, Director, Office of Management and Budget, regarding the terminal Doppler weather radar program	75

INVESTMENT IN THE NATION'S AIR TRANSPORTATION SYSTEM

FRIDAY, OCTOBER 2, 1987

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC.

The committee met, pursuant to notice, at 10:10 a.m., in room SD-628, Dirksen Senate Office Building, Hon. Paul S. Sarbanes (chairman of the committee) presiding.

Present: Senator Sarbanes and Representatives Scheuer and Fish.

Also present: Judith Davison, executive director; and William Buechner and Chris Frenze, professional staff members.

OPENING STATEMENT OF SENATOR SARBANES, CHAIRMAN

Senator SARBANES. The committee will come to order.

This second hearing this morning of the Joint Economic Committee is the first in a series, to be held on a continuing basis, whose purpose is to examine public investment policies and their implication for the Nation's future economic strength.

This morning's hearing will focus on the air transportation system. The subsequent hearings will examine such questions as urban and rural development, physical infrastructure, research and development, and other topics.

The committee has already begun a series of eight hearings in the Subcommittee on Education and Health chaired by my very able colleague, Congressman Scheuer, which will constitute a major inquiry into education and training investment issues.

There are several reasons for beginning these hearings on public investment policies and their implications for the Nation's future economic strength by turning to the air transportation system. It hardly needs repeating that there is deep and broad public concern across the Nation about the capacity of the system to meet the demands placed upon it.

Virtually all air travelers, and certainly all air transportation professionals, are familiar with what have become a litany of problems of delay, misplaced baggage, abrupt cancellations, and arbitrary routings and reroutings.

These problems are more than a question of personal convenience, although they certainly are a question in that regard. They are also costly in an economic sense. According to a Gallup poll taken earlier this year for the Air Transport Association, nearly 50 percent of all air travel is for business reasons. Nearly one-third of

all adults in this country reported flying during the past year—one-third of all adults. And of those who reported flying, one-third reported more than three flights, and 10 percent more than six flights.

Air travel is today the fastest-growing mode of travel in the United States. More than 1.1 million people board commercial airlines each day. A recent study on airports and airways conducted for the National Council on Public Works Improvement found that aviation accounts for more passengers than all other forms of public transportation combined, and is second only to the automobile in terms of intercity passenger miles.

The National Council study found further that the over 410,000 aircraft delays recorded in 1986 represented a 25-percent increase over 1985 and cost airlines and passengers an estimated $3 billion.

The FAA, formally listing 22 airports where delays are frequent, estimates that over the next decade U.S. airports will have to invest nearly $25 billion in capital improvements simply to alleviate the problem of delay.

Now concern over inadequate facilities and scheduling procedures is gravely compounded by concern over safety standards. More than a year ago, in the course of a series of hearings on Federal safety standards, a Joint Economic Committee subcommittee heard witnesses raise serious questions about the condition of U.S. airports and safety equipment, and about the adequacy of airplane inspection, system maintenance, and air traffic control.

They pointed out that despite a much higher traffic load than a decade earlier, there were fewer fully operational air traffic controllers and fewer safety and repair specialists, more operational errors, and more near collisions. Indeed, in the last 5 years alone, near midair collisions have risen steeply and steadily every year, more than tripling since 1982.

Such incidents are projected to number more than 1,000 for the 1987 calendar year, an increase of some 20 percent over last year's level of 840.

Growing apprehension over safety can only erode public confidence in the air transport system, with serious implications for the Nation's transportation infrastructure.

This first chart shows near midair collisions both for all planes and then for commercial airliners. The other two charts show the amount of Federal investment addressed to these problems. One is the Federal aviation outlays per 1,000 revenue passenger miles. What we see is, of course, a sharp decline in the per passenger outlay. As the number of passengers has increased, the outlays have not increased commensurately.

I realize there may be some economies of scale and directly proportionate increases may not be indicated, but this represents a very sharp decline in the commitment of resources.

The final chart shows Federal airport grants in aid per 1,000 revenue passenger miles, and there again we see a sharp decline.

The problems the committee examined 15 months ago have grown more severe. I think it's fair to say that the economy literally moves on its transportation infrastructure and that the air transportation system is an essential, and indeed increasingly essential, part of that infrastructure.

The problems we face today are in large part a consequence of a failure to look ahead to demands likely to be made upon the system, and to take prudent steps to meet them. Investment in our air transport system has been inadequate. The FAA is years behind in implementing its National Airspace System Plan. The cost will now be much higher than originally projected.

The Aviation Trust Fund, which is user financed, was established to assure the funds necessary to make capital improvements in the aviation system. Currently, the trust fund has an unspent balance of more than $5 billion, and much of the annual spending from the fund is used for FAA operating expenses.

The responsibility for an air transportation system which functions efficiently and is capable of meeting the demands of the economy must inevitably be a shared responsibility of the Federal, State, and local governments and the private sector. Today's hearing will be directed to identifying the investment requirements of the system, and defining the part that the Federal Government should play.

Our witnesses have been asked to focus on a number of important questions involving the Federal role, including the need for public-private sector cooperation, long-range planning, the appropriate use of funds deposited in the Aviation Trust Fund, and aviation's role in the Nation's future economic growth.

We will have two panels this morning. The first panel, which is now before us, includes Richard Mudge, the vice president of Apogee Research; Richard Judy, chairman of the Aviation Infrastructure Roundtable and director of aviation for the Miami International Airport; John Baker, president of the Aircraft Owners & Pilots Association; and James T. Murphy, vice president of airspace and airports of the Air Transport Association of America.

Gentlemen, we are pleased to have you here. We will take all of your testimony and then have questions. Before you begin I'll turn to Congressman Scheuer to see if he has any opening remarks.

Representative SCHEUER. I don't have any opening remarks, Mr. Chairman. I congratulate you for your leadership in arranging this hearing to look into this desperately serious problem.

As an ancient pilot and as an elderly passenger, I am concerned about the airlines. Mr. Baker, I joined your organization more than 40 years ago in 1946, so I guess I can be counted among the charter members.

It looks as if there's a major catastrophe out there waiting to happen. I hope we can avoid it and I suppose what this hearing is all about. Thank you, Mr. Chairman.

Senator SARBANES. Thank you.

Senator D'Amato has requested that his opening statement be included in the record. Without objection, it will be placed in the record at this point.

[The written opening statement of Senator D'Amato follows:]

WRITTEN OPENING STATEMENT OF SENATOR D'AMATO

MR. CHAIRMAN, I WANT TO WELCOME TO THE JOINT ECONOMIC COMMITTEE THIS MORNING OUR TWO PANELS OF WITNESSES WHO WILL EXPRESS THEIR THOUGHTS AND IDEAS ON THIS COUNTRY'S AIR TRANSPORTATION SYSTEM. I WOULD LIKE TO COMMEND YOU, MR. CHAIRMAN, FOR YOUR EFFORTS BEHIND THIS NEW SERIES OF HEARINGS ON INVESTMENTS TO ASSURE THE NATION'S FUTURE ECONOMIC GROWTH.

AIRLINE DEREGULATION. THESE TWO WORDS ARE APT TO SPARK DEBATE AMONG PROPONENTS AND OPPONENTS ALIKE. ALMOST EVERYONE HAS SOME HORROR STORY TO RELATE REGARDING HIS OR HER EXPERIENCES WITH THE AIRLINE INDUSTRY.

THE TASK BEFORE THIS COMMITTEE IS TO FOCUS UPON WHETHER OR NOT AIRLINE DEREGULATION IS TRULY TO BLAME FOR THE INCREASE IN PUBLIC CONCERN OVER AIRLINE SAFETY.

DEREGULATION HAS BROUGHT ON MANY CHANGES WITHIN THE INDUSTRY. SOME OF THESE CHANGES HAVE BEEN FAVORABLE WHILE OTHERS HAVE BEEN CAUSE FOR CONCERN. SOME OF THE MOST MENTIONABLE BENEFITS THAT HAVE RESULTED FROM DEREGULATION

ARE: THE DRAMATIC DROP IN THE PRICE OF AIRFARE; THE INCREASE IN THE AFFORDABILITY OF FLYING; AND AN INCREASE IN THE NUMBER OF AIRLINES: FROM 36 TO 74. THE NUMBER OF WORKERS EMPLOYED IN THE AIRLINE INDUSTRY HAS ALSO RISEN BY 29,000 IN 1978 TO 362,000 IN 1986.

THE DOWNSIDE TO DEREGULATION HAS BEEN A SUBSEQUENT INCREASE IN AIR TRAFFIC AND THE UNREALISTIC NUMBER OF FLIGHTS SCHEDULED TO TAKE OFF OR LAND AT THE SAME TIME. CRITICS OF DEREGULATION ARE QUICK TO POINT TO THE RISE IN "NEAR MID-AIR COLLISIONS" WHICH HAVE RISEN FROM 475 IN 1983 TO 839 IN 1986. WHAT THEY FAIL TO REALIZE IS THE RELATION OF THESE FIGURES TO THE TOTAL NUMBER OF FLIGHTS, WHICH WAS APPROXIMATELY 5,700,000 IN 1986.

TO OPPONENTS OF AIRLINE DEREGULATION I MUST ASK WHETHER GOVERNMENT INTERVENTION IS THE PROPER SOLUTION TO THIS PROBLEM. STATISTICS DEMONSTRATE THAT AIR TRAVEL HAS BECOME SAFER IN THE YEARS SINCE DEREGULATION. WHILE THERE HAS BEEN AN INCREASE IN OPERATIONAL ERRORS IN TERMINAL AREAS AND AN INCREASE IN NEAR MID-AIR COLLISIONS, THERE IS LESS EXPOSURE TO RISK THAN EVER BEFORE. GOVERNMENT INTERVENTION INTO THE AIRLINE INDUSTRY DOES NOT NECESSARILY MEAN BETTER EFFICIENCY. THE AIRLINES, SINCE DEREGULATION, PROVIDE BETTER SERVICE, MORE CONVENIENT FLIGHT TIMES TO MORE PEOPLE AT A CHEAPER COST THAN DURING THE PRE-DEREGULATION YEARS.

I LOOK FORWARD TO THE COMMENTS OF OUR WITNESSES THIS MORNING AND TO THE INSIGHT THAT THEY MAY PROVIDE TO THIS COMMITTEE ON OUR AIR TRANSPORTATION SYSTEM.

THANK YOU, MR. CHAIRMAN.

Senator SARBANES. Gentleman, we are ready to hear from you. I don't know if you've worked out any order among yourselves. Why don't we just start from right to left. Mr. Murphy, we'll start with you.

STATEMENT OF JAMES T. MURPHY, VICE PRESIDENT, AIRSPACE AND AIRPORTS, AIR TRANSPORT ASSOCIATION OF AMERICA

Mr. MURPHY. Thank you very much, Mr. Chairman. Congressman Scheuer, I can assure you at this moment that the airlines are not going to say anything derogatory about the AOPA.

As you mentioned, Mr. Chairman, the Aviation Trust Fund established in 1970 was a very memorable event. The establishment of a formal apparatus to gather user-paid funds for capital improvements for the airports and airways and to adequately fund research to support such development was heralded by everybody in the aviation community as a great idea whose time has come.

Since 1970, however, much has been accomplished, but yet much remains to be done. The FAA estimates tax receipts into the trust fund for the 1988 fiscal year beginning the day before yesterday at $3.45 billion. As you mentioned, the uncommitted balance in the trust fund at the close of the last fiscal year, September 30, was approximately $5.6 billion, while outlays from the fund in 1987 fiscal year are $2.6 billion level. More money flows in than is spent and huge balances are accruing and we certainly do have inadequate airport and airway capacity.

The timing of the hearing is important. It is the view of the ATA and its member airlines that the time for rhetorical exchanges as to who bears what share of the blame for an inadequate air transportation system is irrelevant. In our minds, we are at a crossroads where hard, very difficult political decisions at the Federal and local level must be made.

The question before us is straightforward. Do we provide the system capacity to meet public demand, or do we artifically put the brake on demand and squeeze it into a system that the Federal and local governments are willing to provide? That, in a nutshell, is the political dilemma facing us.

I want to put to rest any thought people might have that we are flying empty airplanes. In 1985, the airlines carried 385 million passengers. In 1987 calendar year, we will carry 450 million. Next year, 1988, we estimate 475 million. And by 1992, the FAA estimates 600 million.

But just the growth in the last 2 years, to put it in sharp focus, is the equivalent of picking up the population of West Germany in additional passengers.

And when you focus on the fact that we are putting the great majority of those passengers through the top 35 airports in the United States, it's much more concentrated. It's not a broad-based, evenly spread growth.

To illustrate this—and I'm sure Mr. Judy, Mr. Aaronson, and other of the airport proprietors will make a point of this—we have not had a major airport built in the United States since the Dallas-Fort Worth Regional Airport was opened in 1974.

At the current time, we have one airport that looks to be in a serious planning stage and that's a new facility in Denver to replace Stapleton.

There clearly is a need to enhance the capacity of existing busy airports and build new airports if the demand for transportation is to be met. Certainly the pressing requirement for well-designed, properly instrumented and adequately lighted general aviation and reliever airports must be met.

The situation in the Washington metropolitan area where smaller privately owned and operated GA facilities are disappearing highlights this problem.

We understand that expanding airports or building new ones is essentially a local matter. Regardless of the economic vitality of the community and the economic rewards flowing from major airports, environmental and other social concerns make progress on this front a very difficult process.

Certainly Federal grants are vital, but the airport problem is a shared responsibility and the future growth of what we refer to as a national air transportation system is very dependent on local political considerations.

The airlines clearly recognize that airport capacity must be improved both in the short as well as the long term. Building a new airport is an extraordinarily expensive and time-consuming endeavor, but improving existing airport capacity, while not cheap or easy, can be done in a comparatively short timeframe.

In recognition of these needs, the ATA in 1985 and 1986 conducted detailed analyses of the airfield and equipment needs of the 39 large and medium hub airports, including BWI, Dulles, and National, that account for well over 85 percent of the enplaned passengers.

These studies of the pacing airports clearly demonstrated that additional taxiways, angled runway exits, expanded ramps, short runways for commuter aircraft, and other such efforts, all eligible for funds under the Airport Improvement Program, could do much to enhance capacity and lessen delay.

Airfield construction is an expensive proposition. Depending on length and soil conditions, a runway capable of handling jet transports runs between $50 and $80 million and even higher.

Certainly BWI—and you will hear from its very distinguished director shortly, Ted Mathison—is planning to expand a shorter runway for commuters as well as planning a parallel runway to accommodate its growth. These are both recommendations of the pacing airport study, in addition to an instrument landing system which the Congress saw fit to include in the 1987 FAA's supplemental budget request.

But in order to meet the requirements of the 39 airports, there would be a cost of over $1 billion for pavement and about $150 million for hardware.

Now unlike the airports, the air traffic control system is a sole Federal jurisdiction. Just as airports must be expanded or built to accommodate growth, the ATC system and its operation and maintenance must be modernized with all deliberate haste.

I think we are all tired of reading—and I will not burden the chairman or Congressman Scheuer with what's already in my

statement about underfunding and the needs, but I will say that in our view the three basic problems facing the Federal Aviation Administration today are personnel management, procurement practices, and assured funding.

If you will just reflect for a moment that the aviation industry and in particular the airline industry is the only business that comes to my mind that is totally dependent on a Federal involvement 24 hours a day, 365 days a year. In order to move our product we cannot move an airplane an inch without the active involvement of the Federal Government; namely, the FAA.

So our interest in an efficient air traffic control system is not an abstract one. We are a technologically advanced industry and dealing with a well-intentioned, well-motivated Federal work force like the FAA that is still dealing within the constraints and strictures of the Federal bureaucracy is a very unhappy combination.

That's why we so thoroughly support the efforts of Senators Stevens and Inouye in Senate bill 1159 to create a Federal corporation sustained by the user funds to operate and maintain the air traffic control system, keeping the employees Federal employees, but getting them out from under the strictures of current Office of Personnel Management practices, getting out from under the Federal procurement regulations where, by the way, those instrument landing systems that Congress urgently included by place name in the 1987 supplemental appropriations to the FAA—if we are lucky, will be in place in about 24 to 26 months. Even though we know that the only manufacturer of that equipment meets FAA specifications and said that he could make delivery in 6 months. That's an example. And certainly a guaranteed flow of funds is urgently needed.

Additionally, Senators Ford, Kassebaum, Byrd, and Lautenberg have introduced S. 1600 designed–to make FAA an independent agency and set a guaranteed term for the Administrator. If the Congress in its wisdom does not see fit to go all the way on a corporation, we certainly are intensely interested in supporting S. 1600.

But for the purpose of this hearing, ideally, if there was no deficit, no Gramm-Rudman-Hollings, no congressional budget resolutions, we would just like to see the funding that's there in the trust fund go to work.

We were very encouraged by the action in the House last night in the reauthorization legislation setting the airport aid I believe at $1.7 billion level. This is more like it and it's very encouraging.

But I will close on this note. The National Airspace System Plan inaugurated in 1982 envisioned a modernization and reequipment and automation of the air traffic control system over a 10-year period at a cost of $12 billion. The $12 billion is now roughly $16 billion. We are just now receiving the first hardware for that system; namely, the HOST computer which goes into the air route traffic control centers.

The only thing the HOST is doing for us now, however, is giving us a more reliable piece of equipment and faster processing speed and it's on the air more reliably. It won't be until 1992 and 1993 that the new displays and the software to literally modernize the computer systems and the automation of the air traffic control system come online, and that's only if the FAA makes a critical award for the advanced automation system in the summer of 1988.

So, gentlemen, when we're talking short term in the air traffic control system, meaningful progress in modernization, you're looking at 1992 or 1993 as a kickoff date.

Thank you very much.

Senator SARBANES. Thank you very much, Mr. Murphy. You have been very helpful.

[The prepared statement of Mr. Murphy follows:]

PREPARED STATEMENT OF JAMES T. MURPHY

The creation of the Aviation Trust Fund in 1970 was a memorable event in the history of aviation. The establishment of a formal apparatus of user-paid capital improvements for the nation's airports and airways and an adequately funded research, engineering and development program to support these initiatives was heralded by the aviation community as a great idea whose time had certainly come. Since 1970, much has been accomplished, but much remains to be done.

The FAA's estimate of tax receipts flowing into the Aviation Trust Fund this fiscal year is $3.45 billion. The uncommitted balance in the Trust Fund at the close of the 1987 fiscal year was approximately $5.6 billion, while outlays from the fund for Fiscal Year 1987 are estimated at $2.6 billion. More money flows in than is spent and huge balances are allowed to accrue while inadequate airport and airway capacity are threatening the air transportation system's current reliability and future ability to grow to meet public demand.

The timing of this hearing is important. It is our view that rhetorical exchanges as to who bears what share of the blame for inadequate air transportation system capacity are

irrelevant. We are at a crossroads where hard political decisions at the federal and local level must be made. The question before us is straightforward: Do we provide the system capacity to meet public demand, or do we artificially put the brake on demand and squeeze it into a system that the federal and local governments are willing to provide?

To emphasize the magnitude of the demand aspect, please recall that in 1985, the airlines carried 385 million passengers. This year, we will carry 450 million -- an increase of 65 million passengers in just two years. Moreover, FAA forecasts more than 600 million passengers by 1992. Complicating this rapid growth is the fact that 61 percent of the passengers are handled at just the 20 largest airports. It is at these airports that the capacity issue must be faced immediately.

There has not been a major airport built since the opening of the Dallas/Ft. Worth Regional Airport in 1974. The only major airport at a serious planning stage is the new facility in Denver to replace Stapleton. There clearly is a need to enhance the capacity of existing busy airports and build new airports if the demand for air transportation is to be met safely and efficiently. Certainly, the pressing requirement for well designed, properly instrumented and adequately lighted general aviation and reliever airports must be met. The situation in the Washington metropolitan area where smaller, privately owned and operated general aviation facilities are disappearing highlights this problem.

We understand that expanding airports or building new ones is essentially a local matter. Regardless of the economic vitality of the community and the economic rewards flowing from major airports, environmental and other social concerns make progress on this front a very difficult process. Certainly, federal grants are vital, but the airport problem is a shared responsibility and the future growth of a "national air transportation system" is very dependent on local political considerations.

The airlines clearly recognize that airport capacity must be improved both in the short as well as the long term. Building a new airport is an extraordinarily expensive and time-consuming endeavor, but improving existing airport capacity -- while not cheap or easy -- can be done in a comparatively short timeframe. In recognition of short-term needs, the ATA in 1985 and 1986 conducted detailed analysis of the airfield and facilities and equipment needs of the 39 large and medium hub airports (including BWI, Dulles and National) that account for well over 85 percent of the enplaned passengers. These studies of the "pacing" airports clearly demonstrated that additional taxiways, angled runway exits, expanded ramps, short runways for commuter aircraft and other such efforts -- all eligible for funds under the Airport Improvement Program -- could do much to enhance capacity and lessen delays. Airfield construction is an expensive proposition. Depending on length and soil conditions, a runway capable of handling jet transports runs between $50-$80 million. We estimate that the pavement

required to fulfill the recommendations at the 39 airports would cost a total of $1.04 billion while the facilities and equipment needs -- primarily landing aids -- would cost an additional $152 million.

As to the air traffic control system, there is no local role in the airways. This is strictly a federal responsibility. Just as airports must be expanded or built to accommodate growth, the air traffic control system and its operation and maintenance must be modernized with all deliberate haste.

During the five-year authorization period that ended September 30, 1987, the hardware requirements of the airways were under-funded by nearly $2 billion compared with congressionally approved authorizations. It is becoming more and more apparent that the needs of a technologically advanced, heavily automated, low maintenance requirement air traffic control system cannot be met in the traditional federal establishment and with the vagaries of the current budgetary process.

From our vantage point, it is clear that the three fundamental problems with the FAA are personnel management, procurement and uncertain funding. While these problems are not unique to FAA, they do create a very unsettled and not fully responsive atmosphere for a federal agency which is so intimately involved with a rapidly growing, technologically

advanced industry such as air transportation. That is why Senators Inouye and Stevens introduced S.1159 to create a federal corporation, sustained by user funds, to operate and maintain the air traffic control system. While remaining federal employees, the work force would not be under the current strictures of the federal personnel system. Furthermore, the corporation would be unfettered from the federal procurement regulations and be able to acquire necessary equipment in a timely and, hopefully, less costly manner. Lastly, the steady stream of user generated funds would stabilize the fiscal situation and enable more thoughtful and attainable long-range plans to be developed and implemented.

Senators Ford, Kassebaum, Byrd and Lautenberg have introduced S.1600 designed to once again make FAA an independent agency and establish a fixed term for a professionally qualified Administrator among other things. The introduction of these bills indicates clearly the level of dissatisfaction over the current situation in Congress -- a dissatisfaction shared by the nation's airlines. The nation faces some hard choices if the absolutely vital air transportation system is going to respond to public demand for safety, efficiency and growth.

For the purpose of this hearing, let us suppose that there was no federal deficit, Gramm-Rudman-Hollings or congressional budget resolution -- just a backdrop of fiscal serenity. In

that fantasy environment, we would like to make some suggestions as to the priority needs of the airport and airways system.

The best example available today of problems in ATC system modernization is provided by FAA's Advanced Automation System (AAS) - a key element of the multi-billion dollar National Airspace Plan (NAS Plan). AAS is a complex program, comprised of many discrete elements, intended to provide improvements in safety and capacity, and of particular importance, to terminal control functions. Without AAS, FAA will be unable to introduce automation enhancements essential to reduce risk of mid-air collisions similar to the tragic accidents near Cerritos, California, and Salt Lake City, Utah. Nor, will FAA be able to more expeditiously deliver severe weather warnings of hazards such as wind shear to pilots operating in terminal areas. Nor, will FAA be able to improve capacity significantly in terminal airspace and improve reliability of equipment essential to the controller's job.

The GAO has estimated that completion of the AAS program has fallen about eight years behind schedule and while the FAA states that a three-year slippage is more accurate, the fact remains that the very heart of ATC modernization is well behind schedule. The current schedule calls for FAA to make its production award for AAS in July 1988. This timetable means that the automation improvements needed now for safety and efficiency will not be on line until early 1993. As

disappointing as that latter date might appear, it will slip even further if there is any delay in next summer's production award. The original NAS Plan of 1982 was estimated to cost about $12 billion with the automation feature, the new computers and the Advanced Automation System, representing about one-third of that amount. We are now looking at a $16 billion program and the new computers now being installed are really the first hardware to enter the modernization scene.

Mr. Chairman, there needs to be an immediate and determined national effort to get airport capacity improvements and airspace modernization implemented as well as to improve the operation and maintenance of the air traffic control system. The national air transportation system is stagnating. We realize how difficult it is to overcome deficits, differences of opinion and lethargy, but overcome we must. While there are many reasons for program slips -- contracting, the procurement and acquisition process, and management -- there is also a need for the strong funding base envisioned when the Aviation Trust Fund was established. We all must see to it that this user funded source is used for its intended purpose -- capital development of the airways and airports. The Executive Branch must request what is really needed and the Legislative Branch must appropriate at a level to meet established requirements.

That concludes my prepared statement. I will be pleased to respond to any questions you might have.

Senator SARBANES. Mr. Baker, please proceed.

STATEMENT OF JOHN L. BAKER, PRESIDENT, AIRCRAFT OWNERS & PILOTS ASSOCIATION

Mr. BAKER. Thank you, Mr. Chairman. I'd like to submit our prepared statement for the record and I will summarize to conserve the committee's time.

Senator SARBANES. The full statement will be included in the record.

Mr. BAKER. We applaud the committee's look at this problem because it's apparent we have a runaway problem at the national level and deterioration of a system which is vital for the Nation's economy.

Contrary to the perspective many have, general aviation is equally in the air transportation business to the same extent that the Air Transport Association is. We fly a significant percentage of the hours flown. The air carriers fly about 6 million hours a year. We fly about 35 million hours, and of that 35 million hours, about 94 percent is utilitarian transportation, not sport flying in the classic sense—we are not guys in baseball caps called "Ace" who spend their time boring holes around an airport.

So we are a vital part of this nation's transportation system. We at AOPA represent 260,000 pilots. And the 260,000 pilots who are members of AOPA are the principal users of general aviation. Our members fly about 80 percent of the hours flown in aviation. And we represent both business and personal flying.

One of the tragedies regarding general aviation is the dialogue increasingly seems to have narrowed to the point where business aviation is legitimate and personal aviation is not, whereas air carriers have over 50 percent of their air travelers who are vacationers and fewer than 50 percent are business flyers. A higher percentage of our major users are business users than personal users, but I don't believe one should be discriminated against in either category.

General aviation represents the best transportation buy the American taxpayer gets. We buy our machines. We maintain those machines. We train ourselves. And the benefits from the aircraft go to everyone in every community that we serve. And that's where our importance seems to be overlooked in the national dialogue.

And I'm not so beknighted as to come here and say we represent the arteries of the Nation's transportation system. We don't. But we are by far the biggest single air carrier in this country. In fact, we move more passengers annually than do 20 of the 31 certified airlines in the country and we move more passengers by far than the top three largest airlines, about 185 million a year. That's really relevant in the sense that we do it out of 14,000 airports. As Mr. Murphy of ATA indicated, 75 percent of their traffic is now coming out of about 25 to 30 locations. So we represent the veins and the capillaries, if not the arteries of this system.

I think we currently are probably the classic case of being victimized by poor Federal planning, poor Federal effort, poor Federal execution, and a lack of insight and vision by the administration.

If we're going to survive, all of us in aviation—and our interests are not at all that different than ATA's—we have to have a system that makes some rational attempt to accommodate demand, growth, and changing patterns.

What's happened to us is the converse of that. One of the questions the committee asked is, is the system safe? I think you will find unanimity across the aviation community, particularly those of us out flying, that the system is safe. But it's terribly inefficient and becoming worse daily.

What we are terribly concerned with, since aviation is an American product and we are the world leader and have been from day one, is we are gradually moving away from having a first-class system which leads the world and becoming a second-class participant in the aviation community, both in terms of airframes and in terms of our ability to handle traffic and to optimize the use of aviation in terms of supplying the Nation's transportation needs.

To reiterate I think we would all agree that the system is safe, but we are paying a terrible price for the safety. And that price is loss of utility. I don't know that anyone could calculate the cost the American public is paying in terms of inability to travel, or at least to travel on a reasonable basis anticipating going where you want to go when you want to go. That's no comment on Delta Airlines, I might add.

The legacy of the current DOT is second-class citizenship for aviation and we in aviation have traditionally felt we are a first-class mode of transportation, no matter how modest the machine you're riding in.

The only way we're getting safety currently is mandating less access, emergency restrictions, schedule slippages of the modernization and hiring, and runaway costs in the efforts to modernize the air traffic system.

As Mr. Murphy indicated, we started out with a $11.4 billion program in 1982 which was to modernize this system by the end of the century. We are now looking at an $18 billion program, according to the FAA's numbers, and we haven't bought anything yet. So we're looking over the long haul, if it's ever completed which I think is doubtful with the current direction the program is going, at a $30 billion program. We're going to make DOD look terribly efficient by the time we're done; $700 toilet seats are going to be bargains.

The tragedy is that the technology is there, as Mr. Murphy indicated. The suppliers, by and large, have the ability to supply the equipment had there been proper leadership given. What we are lacking is the leadership and vision. Nothing is gained by substituting motion for progress and that seems to be what we're seeing coming out of DOT and FAA at this point—monkey motion.

We have to also start to level with the American public. There are no quick and easy solutions to this problem. It took us 20 years to get in this mess and it's going to take us a significant number of years to get out of it. New airports come painfully slow, if indeed we ever get them, and I question we will see a new major airport, built in my lifetime, and I plan to be around a long time. I'm ornery enough to almost guarantee it.

I don't believe that DOT has been candid with the American public. We saw the spectacle of the then Secretary—as of yesterday—announcing to the American public she had, by mandate, solved our midair collision problems and so forth, when everyone knows that's simply not true. Blaming the airlines, blaming general aviation—and we seem to be bearing the brunt of it—is not being honest with the American public.

We've had a system failure and we're paying a terrible price for it, and that's true of every user and every passenger in the system.

The committee can make a major contribution by demanding that we have some sort of a coherent aviation policy, not a technical blueprint for nut and bolt equipment procurement and so forth, but a national dialogue which assures that every user's perspective, whether it be the passenger, the operator in the system, or the Government, be aired and balanced so that we come out with some kind of a coherent plan that's going to get us out of the mess we're in and into the future with some hope of realizing the benefits that aviation has to offer.

That solution can't be reduced growth, reduced access, increased delays, increased equipment cost, and the wasteful use of airspace that we currently see.

We can't afford it in aviation, whether it be air carrier or general aviation, and the Nation can't afford it in terms of the indirect cost that the public pays. But that's exactly where we're headed! To effect a turnaround we must craft a careful course and this can only be accomplished with strong national leadership. We can not come up with the national system if we allow decisions to impact on the effectiveness of the national system, and that's indeed where we are now because there has not been effective national leadership.

The Congress is probably the best and maybe the last hope we have to have a national system that works. We must have high level national leadership that will go to the communities and demonstrate the value of an airport because it's suicidal for the local politician to advocate airports. It's simply not a doable political thing.

As a result, we are seeing weird operating requirements being put on piecemeal. And local airports aren't simply local problems. Local airports are a vital part of a national system, so they must have comparable standards. We have to have comparable windows of access so an airplane leaving the west coast knows that when it arrives at the east coast the same arrival rules are going to apply to it there having to do with airports, operating requirements, the air traffic system. We have to have standard noise requirements. We have to take a hard look and balance the environmental versus transportation needs and look for the most public good out of this system.

We can't allow random acts at the local or State level to disrupt regional aviation service if indeed the national will is that we have an adequate national transportation system.

At the time we went into deregulation of the airlines, it was not studied adequately. We didn't have an infrastructure in place that would handle the changing demands. We don't have the kind of elasticity in this system. It's terribly slow to move and, as a result,

you now see the advocates of deregulation—those in the academic community at least—advocating shrinking the system as a benefit from deregulation. Price—only the large aircraft can afford to fly in it. It impacts ATA as much as us.

What it means essentially is we'll turn aviation into a mass transit system between a few major city centers and the rest of the country will be without a viable transportation system, intermediate and long haul at least. Instead of serving 19,000 cities, we'll serve 30 cities. Instead of serving all segments of the American population, we'll be serving only the urban segments.

And if indeed that's the national will, it should be a matter of a study and a dialogue and then the decision made, rather than back into it because of system failures. And that's what we're doing now. We are rationalizing, particularly at the administration level, the system failures by saying, "Well, that's really good because now we're going to have economic use of airports the way the economists would like to see it," and that's that only the deserving—that is, the one that can pay most for it, has access. What that means for North Dakota is they're going to have to save up a week to get an airplane into Chicago.

Now somehow or other that doesn't seem to me to be the way a national system should work. It really is effectively reducing many segments of society and many areas of the country into second-class citizens.

I don't believe there's any quick solutions. I think the first step must be to determine what we are trying to do. Then maybe with some rational leadership we can go out and start putting together a system that, in fact, will recognize all of our aspirations in terms of an efficient, effective, safe national transportation system.

Thank you, Mr. Chairman.

Senator SARBANES. Thank you very much, Mr. Baker. I think your point about the need for a statement of national policy is a very good one. What's happening now, as I think you stated and as I perceive it, is that we are working backwards from the limitations we encounter to find the policy when we should be developing the policy and accepting limitations as consistent with the policy or taking steps to overcome them.

Mr. BAKER. Well, we saw I think an example of that, Mr. Chairman, last year when we testified regarding Senator Byrd's safety commission. There was concern about how the committee was going to be made up. Unfortunately, because you were fair in terms of how that committee was to be constituted, it got politicized. And what happened was the administration loaded it with advocates of deregulation, not people that have a background in safety and not people that have a background in aviation, but people who have an ideological commitment to the marketplace controlling public services.

As a result, I'm not singularly optimistic that we're going to see the kind of policy statement that you anticipated at the time you supported that proposal.

[The prepared statement of Mr. Baker follows:]

PREPARED STATEMENT OF JOHN L. BAKER

Mr. Chairman, I am John Baker, president of the Aircraft Owners and Pilots Association (AOPA). General aviation is the largest segment of airspace and airport users, comprising 98 percent of the U.S. civil aircraft, 96 percent of the pilots, and accounting for 85 percent of total civil aircraft flying hours. It consists of more than 700,000 pilots flying a civil fleet of more than 210,000 aircraft approximately 35 million hours a year. By comparison, U.S. air carriers operate only 4,370 aircraft and fly just 20 percent of the hours general aviation does on an annual basis.

Our members are the chief beneficiaries of system safety and capacity improvements. For every airliner that takes off, 50 general aviation departures occur. For every airport served by an airline, general aviation serves 24. Additionally, our members represent the single largest organized group of airline passengers, purchasing over $500 million in tickets annually. Clearly, our interest in airspace and airway modernization is a continuing one. We want to ensure that what we receive for our tax-contributed dollars is a system that will improve safety and our utility within it.

SYSTEM SAFETY

Over the past year, the shortcomings and needs of the nation's air transportation system have come under increasing scrutiny from many quarters. The Congress, media, general public and the aviation user community have become increasingly critical of the ability of the FAA to provide adequate aeronautical services in an era of increasing demand.

While we have a world standard-setting air traffic control (ATC) system that is currently safe but inefficient, we also have a Department of Transportation (DOT) whose legacy may be the creation of a second-rate air transportation system.

During the past five years, the aviation accident rate has continued its historic decline in all segments of the industry. However, the system efficiency indicators including on-time performance, air traffic services given, controller overtime worked, and measures of unrestrained access have all accelerated toward the definition of a second-rate airspace system none of us should tolerate. In fact, the major users are in full agreement on the urgent need to rebuild our system by expanding capacity.

The net effect of deregulation has been to overburden the airports and ATC facilities in the major metropolitan areas. The solution is not to restrict traffic in these areas but to require a more timely and accurate planning process for facilities and to ensure that those responsible for the execution of these plans are adequately equipped and charged to carry them out. Unfortunately, the DOT and FAA produce an increasing list of announcements for less access, emergency restrictions, delays in modernization and reduced service. The technology is available; the leadership and vision has not been.

The first thing that is required is a coherent statement of national policy for airport and airway access.

It is of little use to go off on missions with neither a sense of purpose nor direction, which is exactly what has occurred since deregulation. Motion does not equate to progress.

In the many technological fits and starts, some coordinated, some not; some long-range, some short; some airborne, some groundbased, very little real capacity, if any, has been added to the system since DFW was built in 1969. This is mostly because of a clear lack of direction.

Billions of dollars have been spent; millions of man-hours worked; hundreds of changes made--all sincerely I am sure and with good conscience, but what has been produced? A system that is behind and not getting any better.

Why?

Because there has been no articulated national policy on air transportation since the Federal Aviation Act of 1958 was debated.

There has been, to borrow a phrase, no flight plan for aviation in the U.S., and the current incoherent morass of well-intentioned, ad hoc actions is the result.

The system is safe and it always will be because that's the operational bias. Is the system effective? Is the system economical? Is the system efficient? Does the system recognize and respond to user need? Is the system coordinated?

To those questions there is only one, short answer--NO.

The first step before this country for aviation is the debating of and agreement upon a national policy on airports, airspace and aviation.

Without such a source of national purpose would we have the interstate system? Would we have put a man on the moon?

Is aviation of any less stature, economic impact or general public benefit? No.

So we need to start at the beginning by developing and agreeing to a national policy.

The system currently in place will carry us through with minimal, though perhaps inconvenient, adjustments. We need to focus on the problem, not allow ourselves to be nibbled to death by the ducks.

We must work together to address ATC system problems. Clearly, the solution for our nation is not reduced growth, reduced access, increased delays, increased equipment costs, or inefficient use of airspace and runways.

Before any new equipment is required in aircraft or air traffic control facilities, the ability of the ATC system to both cope with and then effectively use the additional information must be assured. But without a clear national policy, what does this mean? Nothing.

AOPA suggests that such a policy initiative be led from the White House, using all resources of government and industry, state and local, and be given a short but realistic deadline for its work.

Its resultant statement should clearly articulate the value of aviation to the U.S economy at all levels in all segments.

It should deal with airports.
It should deal with user need.
It should deal with public priorities.
It should deal with value.
It should address system access, both scheduled and on demand.

It should, in effect, recognize the national resource that aviation is in its entirety and provide clear direction to all of us as to how to develop it fully and benefit from its existence and operations.

IMPACT OF DEREGULATION ON SAFETY

Deregulation has produced an air traffic system that is safe but inefficient. It is clear that the FAA has not been able to keep pace with the growth of commercial air traffic brought on by economic deregulation. The unexpected surge of demand was not correctly foreseen by either the FAA or the airlines themselves. Regardless of blame, we are left with an overburdened system.

Deregulation has given birth to increased demand by all segments of aviation on airports for access, service, and physical space. These demands have reduced access to airports and ATC services available for other system users not only at major metropolitan areas but also at intermediate and small communities. As a result, the traveling public is being squeezed into narrowing channels. Seventy-five percent of scheduled airline passenger activity now occurs at 27 airports.

NATIONAL AIRSPACE SYSTEM PLAN PROGRESS

AOPA has been the most severe critic of the National Airspace System Plan (NASP) since its inception.

It is not a policy statement; it is a technical document for the mechanics. We felt that the Plan was a loosely connected group of largely unrelated projects that would not lend themselves to the systems approach. We felt that many of the programs were overly ambitious due to the requirement for as yet uninvented technology and the great complexity involved. Finally, we felt that the Plan was so extensive that changing requirements and technology would overtake many of the programs involved.

As we have seen the Plan evolve, most of our fears have been realized. Major portions of the NASP have slipped by as much as seven years; total program costs have already grown by 50% (at the early stage of development); and portions of the Plan have been abandoned or indefinitely deferred. While some elements have progressed as planned, these have largely used existing technology and have not required integration with other programs. The high-payoff items such as the Advanced Automation System (AAS), Automated Flight Service Stations (AFSS), and Next Generation Weather Radar (NEXRAD) have fallen far short of schedule and promised benefits, and little attention has been paid to satellite capability.

The FAA is woefully inexperienced in the development of ambitious technological programs as represented by the $12 billion (now grown to $18 billion) NAS Plan. While FAA may be able to demonstrate adequate program management on single projects, such as the Host computer, the interdependent nature of some program elements has seemingly produced a domino effect resulting in cascading delays that continue to mount each year. The aviation industry's relief from increasing delays, reduced service and reduced capacity is being pushed farther and farther into the future.

We have repeatedly chronicled the deficiencies of the NASP. In rebuttal, the FAA has provided plausible reasons for planning and programming delays, coupled with assurances for rapid return to schedule. Their reasons and assurances always offer promises of solutions "just around the corner." In the absence of coordinated long-term policy objectives, what else would you expect?

AIRPORTS AND CAPACITY

After safety, the next greatest near-term payoff from the NASP will be ATC system and airport capacity increases. Demands on the system are increasing at a rate that may soon cause an aeronautical gridlock if new methods for accommodating this demand are not found. The principal system factors causing delays are lack of adequate airports and inefficient air carrier scheduling practices.

Improved weather detection and dissemination systems will help decrease the existing 60 percent system delays attributed to weather. New flow management programs will provide for more dynamic means of handling peak traffic. All of these items taken together with improved airports will provide much-needed capacity increases. Unfortunately, many of these technology-based programs are years behind schedule. However, the airport capacity problem will not be solved by additional air traffic controllers and hardware alone. Increases in capacity will require new runways and new airports.

This country needs a clear and well-enunciated national policy on a network of airports--we cannot allow our system to be further degraded by "narrow-gauge" thinking at local levels.

Congestion within the air traffic system, particularly in major terminal areas, is of great concern to our members. The true benefit of a general aviation aircraft lies in its utility and flexibility. To the high percentage of our members who use their aircraft a significant amount of time for business transportation, congestion and delays represent a reduction of the airplane's utility. Delays are at the very least a major inconvenience and expense. Delays reduce the competitive edge produced by the aircraft, on-demand transportation capabilities are lost, and as a result, the aircraft's business value is substantially reduced.

The unpublished 1986 update to the National Plan of Integrated Airport Systems (NPIAS) shows a national need for $24 billion for Airport Improvement Program (AIP) monies over a ten-year period. But even this plan lies outside a clearly

defined policy statement. Eighty percent of this money would be used for maintenance, airport upgrade, capacity enhancement, and safety standards; only 20 percent, or $2.8 billion, would be earmarked for a very modest number of new airports within the United States. Every capacity study that has been done for the airport system predicts the need for significant numbers of new commercial service, reliever, and general aviation airports between now and the end of this century.

There must be an acknowledgement that due to increasing demand upon the system, additional airports or at least additional runways at existing airports must be built, or the desired expansion of airport capacity will prove an unattainable goal. A minimum of $2 billion per year is a realistic starting point for national AIP monies. The existing NPIAS plan and insightful statewide airport plans should be used in conjunction to fulfill this need.

While much emphasis is placed on new and improved airports, maintaining existing airports is of vital importance. Funding must be made available for routine repairs to runways and taxiways if we are to preserve what we already have. Further, we must take steps to protect existing valuable airports by ensuring that valid contracts for surplus property agreements and AIP grant assurances are upheld by the Administration and the Congress. We cannot afford to lose any more of our public-use airports if capacity needs are to be met. Additionally, artificial constraints generated by environmental concerns must be weighed and debated in the context of "greatest good."

Again, without an articulate statement on national policy priorities, nothing significant happens.

AVIATION TRUST FUND

The Federal Airport and Airway Improvement Act was last reauthorized in 1982 for five fiscal years. During this five-year period, ending in October 1987, the Trust Fund established by the Act will have financed approximately $4.8 billion of development of the nation's airports, $4.8 billion of capital equipment for the air traffic control system, and $1 billion of FAA Research and Development. In addition, by the end of Fiscal 1987, the Trust Fund will have underwritten approximately $4.2 billion of the expense of operating and maintaining the air traffic control system. Although the Trust Fund has made substantial contributions to the development of our aviation system, these contributions have fallen short of the expectations we had in 1982. When the program was renewed in 1982, user taxes were increased substantially. We opposed these increases because we felt that insufficient guarantees existed to ensure measurable results.

Time has proven our case as national expenditures for the programs established in 1982 have not approached authorized funding levels, and the users have been paying considerably more into the Trust Fund than has been going out. Ceilings which have been placed on the Airport Improvement Program have resulted in obligations under that program falling $415 million short of the authorized levels. In the Research and Development program, appropriations have been

$133 million short of the authorized levels. Appropriations over the five-year period have been $1.5 billion below the authorized levels for the Facilities and Equipment program.

These shortfalls are inexcusable when user taxes are producing far more revenues than are needed to support the Trust Fund programs. As a result of shortfalls, the uncommitted surplus in the Trust Fund has increased from $2.1 billion at the end of Fiscal 1982 to an estimated $5.6 billion at the end of Fiscal 1987 and a forecast growth to over $9 billion by Fiscal 1990.

We cannot rely on faith or good intentions as the release mechanism for funding improvements. The national government's "impoundment" philosophy, coupled with a belief that the general public receives no value from the aviation transportation system, has produced a reckless policy that undermines both safety and capacity. Moreover, in the absence of clear national purpose to the contrary, why not rob Peter to pay Paul?

AN INDEPENDENT FAA

AOPA is very concerned with the unresponsiveness of the Federal Aviation Administration to the needs of the user and its inability to initiate change in an efficient and effective manner. This is particularly true with regard to the air traffic system but is also sadly the case throughout the entire Agency. Our own analysis of this problem indicates that these deficiencies are a result of the bureaucratic layering of the current Administration.

The FAA is constrained by too many overseers. The effect of the Department of Transportation, the Office of Management and Budget, and the Congressional appropriations process all tend to stifle initiative on the part of the FAA and promote inefficiency in the execution of either plans or day-to-day operations. Clearly, the problem is an organizational one. More independence both in the planning and execution process is required if the FAA is to serve the user and the general public in the best possible manner. Moreover, there must be a clear line of control and responsibility to the user when considering such a reorganization.

We, the public, should have the ability to know who is responsible for problems and why, and we believe the Congress is best equipped to ask the public questions and demand the real answers not filtered through several additional layers of political appointees.

FAA responsibilities for safety and promotion of commercial aviation are not as contradictory as implied. Despite its often apparent inability to bring important safety and system efficiency programs to fruition, it is more often interference from within the Executive Branch as well as failures in management and shortfalls in technical skills within the Agency than economic or political pressure from operating (commercial) segments of aviation which render FAA impotent.

There is no doubt about aviation industry concern regarding the efficacy of an FAA buried under the weight of DOT leadership which consistently seeks to

micromanage aviation activities it is ill-equipped to understand and which are the clear responsibility of the FAA. The Air Transport Association (ATA) "Federal Corporation" proposal, though not widely supported, reflects both this concern and aviation industry frustration with bureaucratic inertia and political agendas originating primarily within the DOT.

The FAA has become a vassal of the Office of the Secretary of Transportation (OST) staff instead of exercising the broad powers given it by Congress in the Federal Aviation Act of 1958. It should be given greater autonomy to manage its own planning, operations and finances.

A first step in this direction? Remove the FAA from the oversight of the Department of Transportation and make it once again an independent agency. The second step is to ensure that the Aviation Trust Fund is expended for its intended purpose, funding capital improvements in America's national airspace system.

But even the independence of the FAA and freeing of the Trust Fund would be of little real benefit in the absence of a clearly articulated national policy.

INSTRUMENT APPROACH AIDS

Communities have been denied precision approach capability far longer than safety can afford due to the decision to suspend ILS installations in favor of MLS. However, we are reassured to an extent by an apparent willingness on the FAA's part to install a limited number of ILSs and to reconsider the total number of MLS units that are truly needed. This committee's interest in action to allocate funds for additional ILS installations at urban reliever airports is critical.

It is important to emphasize that FAA has not yet completed development in the MLS program which will permit use of MLS for category II or III approaches requested by air carriers, nor provided assurance of the system capacity increases alleged to accompany the MLS implementation. In fact, Boeing stated in a letter to the FAA that its planned 1988 initial installations of MLS in customer aircraft would be delayed until the "mid 1990's" since all customers "have rejected the MLS options."

MLS is equally unpopular in the general aviation sector since retrofit of ILS airborne equipment with MLS receivers would cost an estimated 140,000 aircraft owners between $10,000-15,000 each, for a total cost of as much as $2.1 billion.

AOPA has recommended that by 1998 the FAA install MLS at those airports where it is required to meet international agreements and, where ILS already exists, to realize what capacity enhancements are available. We also recommend an aggressive return to ILS installations. There are hundreds of communities which need a precision approach capability at their airports. Prompt installation of ILS at those airports is the only way that precision approach requirements can be fulfilled in a timely manner.

In contrast to MLS, the Congress and FAA investment in Loran-C instrument approaches has been productive and well received by the user community. We

are now at the point in the program where 1988 funds must be appropriated to develop and flight-check specific approaches at airports. Unlike MLS, this will only cost $10,000 for each new approach, and 270 are needed in the initial implementation. It is important to note that these funds should be dedicated to airport capacity increases where there currently are no instrument approaches to provide aircraft access during poor weather conditions. Loran-C approaches at urban reliever airports will decrease demand at the larger air carrier airports and relieve capacity constraints.

WEATHER INFORMATION FOR CAPACITY INCREASES

Weather remains the single greatest cause of fatal accidents in both general aviation and the airlines, and it accounts for over 60 percent of the ATC system delays.

Most important in the enhancement of weather products and services is the FAA deployment of automated weather observation systems (AWOS). These systems will provide both pilots and forecasters information essential to improving flight safety and airport capacity. FAA has dragged its feet deploying an AWOS system while haggling over what sensors should be used under what specifications. AWOS is an available technology. A certified system developed in California exists, and it should be immediately produced and installed with federal and/or state funds.

RESEARCH, ENGINEERING AND DEVELOPMENT (RE&D) PROJECTS

The House-passed 1988 DOT appropriations bill calls for $161.5 million for FAA RE&D. This is an $11.5 million increase over the 1988 Administration budget request and reflects Congressional concerns over capacity. This figure includes funds for ongoing and proposed projects that are necessary to the future well-being of the NASP and for a limited number of future projects. This amount may not be enough to fund immediate or future RE&D requirements for the required aviation system needs for this nation.

System capacity problems have reached the critical point for many of our major metropolitan areas. Congress recognized the magnitude of this problem with the addition of $5.5 million for airport capacity research to be used to fund a high-priority industry task force on airport capacity improvement recommendations.

AOPA applauds this effort and Congress's decision to add these badly needed airport capacity funds to implement research requirements for converging and parallel instrument approaches, improved terminal sensors, and reduced longitudinal separation.

Perhaps the greatest long-term research needs are for future systems definition. Satellite systems promise great improvements for all forms of aviation in terms of communication, navigation and surveillance. Recent U.S. and international efforts have clearly identified these benefits and developed conceptual plans for implementing these systems. Much work must be done in basic research to bring these concepts to maturity, yet only five percent of the RE&D budget has been allocated to this essential activity.

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For some time we have been concerned that the FAA has not examined the rapidly approaching satellite revolution in aviation. Just within the past year, the international community has made quite clear its intention to proceed rapidly with satellite technology for aviation, so we must rapidly address this issue if we are to gain the maximum benefit from the technology. More importantly, the interaction between satellite systems and the existing NASP programs must be carefully examined to ensure that they do not inhibit the application of superior technology when appropriate. But this must be spelled out concisely in a national aviation policy if it is to happen.

SUMMARY

The air traffic system in the United States is safe. However, the price we pay for a safe yet overburdened system is delays. In the short term, these delays can be reduced by more realistic peak-hour air carrier schedules and improved flow control procedures. In the long term, additional and improved airports coupled with NASP improvements should meet realistic demand forecasts.

These changes will not be easy and will require the broadest possible advocacy if we are to improve system performance in times of increasing demand.

The FAA should be afforded more autonomy to plan for and meet these demands. Overzealous overseers have reduced the FAA to a subordinate role in a process that requires in-depth knowledge of our complex national air transportation system. The return to an independent FAA would be a good first step in meeting this goal.

While airline deregulation may have initially benefited the passenger, it has outstripped the ability of the system to accommodate the dramatic growth it has brought. There must be a method of expressing the legitimate needs of the traveling public from all points of origin in a timely manner and an ability to meet these requirements in an equally timely manner. Until this happens, the system will remain overburdened and inefficient.

All of the foregoing examples are treatments of the symptoms, not the disease. Without a clearly articulated national aviation policy, only more of the same can be expected.

The federal government's reluctance to adequately fund and support the Airport Improvement Program puts a squeeze on capacity. Without sufficient research, the technology improvements will never be developed, and without sufficient airport and airway development, the NASP products will be deployed into a constrained environment hopelessly mired in systematic gridlock. We must overcome our existing technological and bureaucratic entanglements and establish a solid foundation to meet capacity demands of the future.

Further, we must take steps to protect existing valuable airports by ensuring that valid contracts for surplus property agreements and AIP grant assurances are upheld by the Administration, the Congress, and state government. We

cannot afford to lose any more of our public-use airports if capacity needs are to be met. Finally, the military must be brought into the game because its vast resources can be of significant short-term benefit.

The users of the system are paying their fair share and are demanding that system improvements be funded and implemented promptly.

AOPA believes the time has come to exchange the microscope for the telescope, set our sights on the future, not be distracted by the past, and chart a clear course for aviation in the United States. The national economic lifeblood depends on aviation in all its forms.

This must finally be recognized and raised to the level of national debate on its overall merit, not be discussed simply as a result of some isolated media event such as the very rare but spectacular accident.

We sincerely appreciate the efforts of this committee to allocate increased funding for the aviation system. We look forward to working with you during the course of your deliberations.

Senator SARBANES. Mr. Judy, please proceed.

STATEMENT OF RICHARD H. JUDY, CHAIRMAN, AVIATION INFRASTRUCTURE ROUNDTABLE

Mr. JUDY. My name is Richard Judy. I'm the chairman of the Aviation Infrastructure Roundtable. The Aviation Infrastructure Roundtable is a coalition of 12 aviation industry organizations with members representing a wide range of interests from passengers to airlines, from aircraft manufacturers to pilots, from airports to tenants, and from business aviation to general aviation, and finally from those that build the infrastructure to those that manage the business interests of our Nation. The major objective of the organization is to increase public awareness of the critical shortage of airport and airway infrastructure capacity.

The poor state of the aviation system of our nation is of detriment to all of us, not just to those of us in the industry and not just to those of us that fly. Because it is the national infrastructure of interwoven elements including roads, electricity, telephones, educational institutions, and airports and airways that allow us as individuals to turn our hard work and talent into our national product. Air transportation is, of course, just one of those infrastructure elements, but one which is critical to our ability to use our talents and resources efficiently, to expand the markets availability to our goods and services, and therefore critical to our competitiveness in the international marketplace. For these reasons, the needs of the aviation system are needs to which we should all apply ourselves, not just the aviation community. It is refreshing, therefore, to see that the plight of the aviation infrastructure of this nation has attracted the attention of this committee.

Most of the well-documented problems affecting our industry, such as delays, are the direct result of inadequate capacity. This inadequacy has arisen because we have failed completely to provide the necessary aviation capacity to meet current demand, not to mention the needs of tomorrow. All of us—the aviation industry, the administration, and the Congress—are responsible for this failure. We have not done enough to educate our States, local communities, and the American people of the real inadequacies of our aviation system and the need for the long overdue enhancements and major additions.

As the rift has widened between how much infrastructure we need and how much we have, so the symptoms of the capacity shortage have become increasingly visible. The cost of delays, for example, is now approaching $5 billion a year in lost time and increased travel costs as well as many millions more in the anxiety the delayed traveler feels when worried about missing a meeting or rushing to get home. Scarcely a week goes by without a Congressman, the electronic or printed media expressing public frustration. It should never have reached this stage and would not have done so if the industry, the administration and Congress had made the public aware of the inevitable capacity crisis, its costs to the Nation, and what must be done.

Slowly the tide is turning. The new FAA Administrator has committed his agency to enhancing the capacity of our aviation infra-

structure, and most importantly, accelerating airway improvements that are now years behind schedule. Industrywide groups such as AIR are spreading the word, and congressional committees such as this one are taking a real and determined interest, learning the problems, and determining the course they must take to meet their responsibilities in implementing the solutions.

We must, however, collectively cease the use of the short-term band aids that cover the symptoms without curing the disease. If we keep obscuring the real problems and the real solutions from the public, we will never generate public endorsement and financial support to implement the solutions. The years of regulation that suppressed demand also suppressed the voices of those in the 1970's that were attempting to warn anyone who would listen of a pending capacity crisis. Instead, we endorsed non-market-based regulatory practices which would create public outcry in other industries. For example, scheduling talks were held recently to reduce delays, when the real problem isn't that too many consumers want to fly at 8 in the morning and 5 in the evening; it is that there is not enough capacity to handle all those that want to fly at such times. It is not that we oppose the interim use of scheduling talks per se, but rather because such short-term painkillers became long-term problems and are then sold to the public by the media as the cure. The high-density rule—a short-term painkiller—was applied to five airports in 1969 as a temporary congestion-easing measure and it is still in place today. In the meantime, consumers have paid billions in excess costs because of these five critical constrained airports and have endured additional billions of dollars in delay costs, not to mention the tremendous economic damage to the high-density airport communities. As an example, in almost 20 years, not one significant capacity improvement, until recently, has been implemented to relieve National Airport, the nearest high-density rule airport to this hearing.

It is no different than a beltway traffic jam. Most of us don't blame those around us for wanting to get to work at the same time, and you don't solve the problem by instituting agreements for everyone to come to work at different hours throughout the day and night. If we were to ask businesses to hold worktime scheduling talks, there would be an immense public outcry by both employers and employees. Instead, you find out who is responsible for failing to plan and provide adequate ground transportation capacity and you then solve the problem by expanding and adding more capacity. The same rational approach is long overdue in aviation and it is about time that such scapegoats as deregulation, carrier scheduling practices, high-density rules, deficits, safety, and many others cease to be used to push blame for all of our collective failings onto each other. To continue to do so is to mislead the American people and to ensure that they will not get the economic and leisure time benefits from aviation they deserve. The media has many powerful tools for transmitting information to the public; it is a pity that their coverage of delays has done so little to promote the needed enhancement and additions to our aviation infrastructure. They have done a good job, however, promoting reregulation and a distrust of the marketplace.

You are aware that the Airport Trust Fund has a surplus of $5.6 billion in user fees paid by travelers and shippers, which by long-term congressional policy is intended to be spent primarily on airport and airway improvements. This money is desperately needed to be spent to clearly establish congressional will and thus indicate a new start in the process to develop a system of enhancement and additions to our aviation system that will meet our current needs and those of future generations. I use the word "start" carefully because much that has been said and written on this surplus issue would indicate that if we spend the nearly $6 billion surplus our problems are solved. They will not be.

Airport Operators Council International has estimated that the airport capital development needs alone will be $30 billion over the next 5 years. The FAA has estimated a $24 billion requirement for the federally eligible portion over the next 10 years and neither of these two estimates includes the 16 new major airports which we need within the next decade.

It is extraordinary that we can let ourselves be in a position where the cheapest capital part of the aviation system—airports and airways—constrain the use of the more expensive parts—like the billions of dollars of aircraft that you will find sitting on the ground or circling in the air because of the capacity shortage. To draw an analogy, it is like spending billions and billions of dollars on a new highway and then failing to build adequate exits and entrances at a cost of a few million dollars. An airport, after all, is just an exit or an entrance point to and from our "highways in the sky" and it is the cheapest part by far of our aviation service system.

The Office of Management and Budget has made arguments that the $6 billion surplus in the Airport Trust Fund is an accounting mirage since equivalent general revenue fund moneys have been used in lieu of trust fund moneys to meet certain FAA costs. This view is symptomatic of having failed to appreciate the general welfare benefits enjoyed by all citizens from our aviation system, and not just the users of the system, through the role the aviation infrastructure plays in our national defense and as a cog in the productive and social machinery of the Nation.

More air transportation capacity will involve building more airports of every kind throughout the country and the acceleration of existing and new capacity enhancement programs which are now some 7 years behind schedule. The list of the specific program will be discussed by members of our AIR coalition and others that will appear before this committee. The first step, however, must be to let the public know clearly of the real crisis facing our Nation's aviation system. Until that is achieved, we will never receive a clear public mandate to solve our problem.

Today, we have no central master plan containing the details of exactly what must be done before our infrastructure can be considered adequate. If we in the industry, the DOT, and Congress do not have such a master plan of our needs, then how can we expect the public to know? And if they don't know what is needed, how can we expect a clear mandate from them to get on with it? We must therefore set about clearly defining what the current and future needs are, and the individual roles each of us must play in influ-

encing those needs—the master plan. To this end, we support the proposal of Congressman Mineta for a study and definition of our aviation infrastructure needs through the year 2010. But it is imperative that the critical findings of this study be released on a much shorter time scale than the current 1990 deadline. We suggest a first phase report due at the end of 1988, which would identify the most crucial and pressing needs. From a clearly defined understanding of our needs, we can design and plan a system of airports, heliports and airways for the year 2010 and beyond. It is then that State and local interests will step in to do their part. We have a model to follow in the interstate highway system where administration and congressional leadership showed the public a great need and a plan. The public supported the effort and the 50 States banded together against great odds to make it happen.

We need the leadership of Congress and a Federal master plan like that which led to the construction of our interstate highway system 30 years ago. Just imagine how the productive capacity of our nation, how the prosperity of each individual American would have suffered without the interstate highway system. You can then clearly see how it will suffer in the coming 30 years if the leadership on Capitol Hill and in the White House cannot set about the first steps necessary in providing the "interstate skyway system"—2010.

Perhaps the greatest impediments to such progress is the consideration of the huge Federal budget deficit, particularly now that Gramm-Rudman has been strengthened. However, in our efforts to cut the deficit we must not cut critical national investments which in the short and long run would actually increase the deficit. Unfortunately, to date, that is what we have done with our aviation infrastructure. Tax revenues from the fair taxation of income to meet the human challenges of the underprivileged of our great society depend upon the growth of our gross national product, and an efficient aviation system infrastructure is an essential machine that makes possible the growth of that gross product. By limiting the Nation's infrastructure development, the real solutions of growing out of our deficit through hard work are lost. We all know it will be our children who will inherit the real adverse impacts of our deficit. Sacrificing the aviation infrastructure investment for the appearance of short-term gains can only serve to saddle future generations, and deny them a standard of living they are entitled to by unfairly penalizing them with our imprudence.

It is the future we are trying to make room for and thus to provide the opportunity for our children to continue the design of our continent and their future on the ground and in the air.

Thank you, Mr. Chairman, from the members of AIR, and please believe that we are not here to create alarm but to begin the process of reasoning together. Thank you.

Senator SARBANES. Thank you very much, Mr. Judy.

[The prepared statement of Mr. Judy follows:]

PREPARED STATEMENT OF RICHARD H. JUDY

Good afternoon, Mr. Chairman and members of the Committee. My name is Richard Judy and I am Chairman of the Aviation Infrastructure Roundtable, as well as the Director of Miami International Airport.

The Aviation Infrastructure Roundtable is a coalition of twelve aviation industry organizations with members representing a wide range of interests from passenger to airlines, from aircraft manufacturers to pilots, from airports to tenants, from business aviation to general aviation, and finally those that build the infrastructure to those that run the major business interests of our nation. The major objective of the organization is to increase public awareness of the critical shortage of airport and airway infrastructure capacity.

The poor state of the aviation system of our nation is of detriment to all of us, not just to those of us in the industry and not just to those of us that fly. Because it is the national infrastructure of interwoven elements including roads, electricity, telephones, educational institutions and airports

and airways that allow us as individuals to turn our hard work and talent into our national product. Air transportation is just one infrastructure element, but one which is critical to our ability to use our talents and resources efficiently, to expand the markets open to our goods and services, and therefore to our competitiveness in the international marketplace. For these reasons, the needs of the aviation system are needs to which we should all apply ourselves, not just the aviation community. It is refreshing, therefore, to see that the plight of the aviation infrastructure of this nation has attracted the attention of this committee.

Most of the well documented problems affecting the air transportation industry such as delays, are the direct result of inadequate airport and airway capacity. The inadequacy of our aviation infrastructure has arisen because we have failed completely to provide the necessary airport and airway capacity to meet current demands, not to mention the needs of tomorrow. All of us -- the aviation industry, the Administration and Congress -- are responsible for this failure because we have not done enough to educate our states, local communities and the American people of the real inadequacies of our existing aviation system and the need for long overdue enhancements and major additions.

Let me give you one of many examples of how our aviation system has not kept pace with the demands placed upon it. Since airline deregulation in 1978 the numbers of passengers travelling by air has increased by over fifty percent yet it has been fourteen years since the last large airport was built, and by every estimation the growth of air transportation is expected to nearly double again to 750 million passengers by the turn of the century, only 12 years away. Keep in mind that it now takes ten years to build a new major airport.

As the rift has widened between how much infrastructure we need and how much we have, so the symptoms of the capacity shortage have become increasingly visible. The cost of delays, for example, is now approaching $5 billion a year in lost time and increased travel costs as well as many millions more in the anxiety of delayed traveler feels when worried about missing a meeting or rushing to get home. Scarcely a week goes by without a Congressman, the electronic or printed media expressing public frustration. It should never have gotten to this stage and would not have done so if the industry, the Administration and Congress had timely made the public aware of the inevitable capacity crisis, its costs to the nation and what must be done. Slowly the tide is turning; the new Administrator of the FAA has committed his agencies to enhancing the capacity of our aviation

infrastructure, and accelterating airway improvements that are now seven years behind. Industry wide groups such as our own are forming to spread the word, and Congressional Committees such as this one are taking an interest, learning the problems, and determining the solutions they must take to meet their responsibilities in implementing the solutions.

We must, however, collectively cease the use of short term Band-Aids that cover the symptoms without curing the disease. If we keep obscuring the real problems and their real solutions from the public, we will never generate their endorsement and motivation to implement the solutions. The years of regulation that suppressed demand also suppressed the voices of those in the 1970s that were attempting to warn anyone who would listen of a pending capacity crisis. Instead we have relied on practices which would create public outcry in other industries. For example, scheduling talks were held recently to reduce delays, when the real problem isn't that too many consumers want to fly at eight in the morning and five in the evening; it is that there is not enough capacity to handle all those that want to fly at such times. It is not that we are against scheduling talks but rather that such short term pain killers become long term problems and are sold to the public as the cure. The High Density Rule -- a short term pain killer -- was applied to five airports in 1969 as a temporary congestion easing measure and it

is still in place today. In the meantime, consumers have paid billions in excess costs because of these five critical constrained airports and have endured other billions of dollars in delay costs, not to mention the tremendous economic damage to the high density communities involved. As an example, in almost twenty years not one significant airway or airport capacity improvement until recently has been implemented to relieve National Airport, the nearest high density rule airport to this hearing.

It is no different than a Beltway traffic jam. Most of us don't blame those around us for wanting to get to work at the same time, and you don't solve the problem by instituting agreements for everyone to come to work at different hours throughout the day and night. If we were to ask businesses to hold work time scheduling talks, there would be an immense public outcry by both employers and employees. Instead, you find out who are responsible for failing to plan and provide adequate ground transportation capacity and you solve the problem by expanding and adding more capacity. The same rational approach is long overdue in aviation, and it is about time that such scapegoats as deregulations, carrier scheduling practices, high density rules, deficits, safety, and many others, cease to be used to push blame for all of our collective failings and problems onto each other. To continue to do so is to mislead the American people and to

ensure that they will never get the economic and leisure time benefits from aviation they deserve. The media has many powerful tools for transmitting information to the public and it is a pity that their coverage of delays has done little to promote the needed enhancement and additions to our aviation infrastructure. They have done a good job, however, promoting regulation and the distrust of the marketplace to meet the challenges we face.

No doubt you are aware that the Airport and Airways Trust Fund has a surplus of approximately $6 billion in user fees paid by travelers and shippers, which by long-term Congressional policy is intended to be spent primarily on airport and airway improvements. This money is desperately needed to be spent to clearly established Congressional intents, and to indicate the new beginning in the start of the process to develop a system of enhancement and additions to our aviation system that will meet the needs to the next generations of Americans. I use the word "start" carefully because much that has been said and written on this surplus issue would indicate that if we spend the nearly $6 billion surplus our problems are solved -- they will not be. Airport Operators Council International (AOCI) has estimated that airport capital development needs alone will be $30 billion over the next five years. The FAA has estimated a $24 billion requirement

for the federally eligible portion over the next 10 years and neither of these two estimates includes the 16 new major airports which will be needed within the next decade.

To get this job done, the entire aviation industry wants the Trust Fund off budget and the surplus spent. Such a decision will clearly state to the aviation industry and all Americans the new beginning in determining to solve our airports and airways capacity crisis now and in the year 2010. The capital figures may sound large but they are not, and the price we must pay outweights the cost we are already paying in waste. While taking the Trust Fund off budget is a very critical first step, that alone will not solve the nation's need for system capacity. Other sources of revenues -- either Federal, state and local revenues, or a combination -- are going to be required to really do an adequate job.

It is extraordinary that we can let ourselves be in a position where the cheapest capital part of the aviation system-- airports and airways -- constrain the use of the more expensive parts -- like the billions of dollars of aircraft that you will find sitting on the ground or circling in the air because of the capacity shortage. To draw an analogy, it is like spending billions of dollars on a new highway and then failing to build

adequate exits and entrances at a cost of a few million dollars. An airport, after all, is just an exit or entrance point to and from our "highway in the sky" and is the cheapest part by far of our aviation service system.

The Office of Management and Budget has made arguments that the six billion dolar surplus in the Airport and Airways Trust Fund is an accounting mirage since equivalent general revenue fund monies have been used in lieu of Trust Fund monies to meet certain FAA costs. This view is symptomatic of having failed to appreciate the general welfare benefits enjoyed by all citizens from our aviation system, and not just the users of the system, through the role the aviation infrastructure plays in our national defense and as a cog in the productive and social machinery of the nation.

More air transportation capacity will involve building more airports of every kind throughout the country and acceleration of existing and new capacity enhancing airspace programs now over seven years behind schedule. The list of the specific programs currently but will be discussed by members of our AIR coalition and others that will be appearing before this committee.

The first step, however, must be to let the public know clearly what is the real crisis facing our nation's aviation system. Until that is achieved we will never receive a clear public mandate to solve our problems.

Today we have no central master plan containing the details of exactly what must be done before our aviation infrastructure can be considered adequate. If we in the industry, the DOT and Congress do not have such a master plan of our needs, then how can we expect the public to know? And if they don't know what is needed, how can we expect a clear mandate from them to get on with it? We must therefore set about clearly defining what are our current and future needs and the individual roles each of us must play in influencing those needs -- the master plan. To this end we support the proposal of Congressman Mineta for a study and definition of our aviation infrastructure needs through the year 2010. It is imperative that the critical findings of the study be released on a much shorter time scale than the current 1990 deadline. We suggest a first phase report due at the end of 1988, which would identify the most crucial and pressing needs. This should be mandated by Congress in the Reauthorization of the Airport and Airway Improvement Program. From a clearly defined understanding of our needs we can design and plan a system of airports, heliports and airways for the year 2010 and beyond. And it is then that state and local interests will step in to do

their part. We have a model to follow in the interstate highway system where Administration and Congressional leadership showed the public a great need and a plan. The public supported the effort and the fifty states banded together against many odds to make it happen.

We need leadership of Congress and a federal master plan like that which led to the construction of our interstate highway system thirty years ago. Just imagine how the productive capacity of our nation, how the prosperity of each individual American would have suffered without the interstate highway system and you then clearly see how it will suffer in the coming thirty years if the leadership on Capitol Hill and in the White House cannot set about the first steps necessary in providing the "INTERSTATE SKYWAY SYSTEM" -- 2010.

Perhaps the greatest impediment to such progress is the consideration of a huge Federal budget deficit, particularly now that Gramm-Rudman has been strengthened. We must, however, in our efforts to cut the deficit not cut critical national investments which in the short and long run would actually increase the deficit. Unfortunately, to date that is what we have done with our aviation infrastructure. Tax revenues from the fair taxation of income to meet the human challenges of the underprivileged of

our great society, depend upon the growth of our national gross product, and an efficient aviation system infrastructure is an essential machine that makes possible the growth of that gross product. By limiting infrastructure development the real solutions growing out of our deficit through hard work are lost. It will be our children who will inherit the real adverse impacts of our deficit. Sacrificing airport and airway infrastructure investment for short-term gains can only serve to saddle future generations with a low-growth economy and unfairly penalize them for our fiscal imprudence.

It is the future we are trying to make room for and thus to provide the opportunity for our children to continue the design of our continent on the ground and in the air.

Thank you from the members of AIR.

Senator SARBANES. We will now hear from Mr. Mudge.

STATEMENT OF RICHARD R. MUDGE, VICE PRESIDENT, APOGEE RESEARCH, INC.

Mr. MUDGE. Thank you, Mr. Chairman.

I am pleased to appear before this committee today. By way of background, I am a transportation economist with more than 15 years' experience in the public and private sector and at the national and local levels of government. I am vice president and cofounder of Apogee Research, a Maryland-based firm that specializes in economic, finance, and policy-related problems of public works. Until last year, I was Chief of the Public Investment Unit with the Congressional Budget Office. In fact, this is the first time I've been allowed to read my own testimony.

Much of my testimony today draws on work that Apogee has completed for the National Council on Public Works Improvement. Of course, all the comments reflect my own personal opinion.

On balance, I believe the U.S. aviation system has performed well. This is certainly true relative to aviation in other countries and even to most other U.S. modes of infrastructure. Its most serious problems concern congestion and delay, both signs of aviation's success in the marketplace. In general, while the seriousness of existing problems should not be dismissed, they are clearly within our ability to solve if we have the will.

By way of background, the Nation's aviation system has three major components: airports, aircraft and airlines, and air traffic control.

With 16,000 airports, the United States has more than the rest of the world combined. Most of these serve small airplanes. Commercial air travel is concentrated at a few airports. Of the Nation's 550 commercial airports, for example, only 72 account for 90 percent of passenger traffic. The top 27 alone handle 69 percent of passenger enplanements.

Most commercial airports are publicly owned and operated, 60 percent by the local community and most others by public authorities. Typically, the large commercial airports operate as self-sufficient enterprises, with most capital funds provided through the tax-exempt bond market and operating costs financed by landing fees and other direct user charges. Historically, Federal grants have covered 20 percent of capital costs for large airports ranging up to 90 percent at general aviation airports.

The air traffic control system is owned and operated by the FAA and represents the most direct and significant Federal influence on aviation. Federal expenditures on the air traffic control system exceed $3.7 billion, all but one-fourth for operations—mostly salaries for the air traffic controllers. The FAA is also in the midst of a $16 billion effort, called the National Airspace System Plan, to modernize the air traffic control system.

The vast majority, 99 percent, of aircraft are small planes owned by individuals and corporations. In terms of the most visible output of the aviation industry—the intercity movement of people—the 1 percent of the fleet owned by commercial airlines accounts for some 95 percent of all aviation passenger miles.

The airline industry has undergone dramatic organizational and economic changes over the past 10 years, mostly triggered by the end to Federal regulation in 1978. These changes include:

A revolution in how airlines compete, with a new emphasis on price and a change in the cost structure of every major carrier.

A wave of mergers that may, in time, reduce current levels of competition.

An emphasis on the use of airline hubs. This has concentrated traffic at certain airports, adding to congestion in some cases and diverting traffic from major airports in others.

Figure 1 in my prepared statement shows a very simple model of the impact of aviation on the economy. As the demand for aviation increases, public investment in airports and air traffic control is likely to increase as well, particularly since most public aviation spending is financed by users. This added system capacity can, in turn, stimulate additional aviation demand. Ultimately, both air transport demand and public investment affect all aspects of the economy.

In addition to its importance as part of the Nation's infrastructure, aviation is a significant industry in its own right. The private portion of the industry—airlines, general aviation, and civil aircraft manufacturing—total some $74.5 billion a year in revenues for 1985. Added to this is $8.2 billion in spending by all levels of government to operate, maintain, and build the Nation's airports and air traffic control system. Thus, public spending represents about 11 percent of the total spending. The ratio of private to public—about 9 to 1—shows the critical importance of making sure that public funds are spent efficiently and that private and public investments are coordinated.

A comparison of the fraction of gross national product devoted to aviation shows steady growth in the industry through the 1950's and 1960's. There was a sharp peak in 1980 followed by 6 consecutive years of decline. Figure 2 in my prepared statement shows this.

One possible explanation for this apparent "maturity" in the industry includes the recent sharp declines in the real price of air travel. People have simply been traveling more and paying less. Indeed, in a period of declining real prices for travel, spending on aviation may not be the best measure of industry output. Figure 3 in my prepared statement shows that the passenger miles traveled per $1,000 of GNP has continued to grow, albeit less dramatically than before 1980.

Let me turn to capacity. Since 1950, commercial airport activity has increased exponentially. In 1950, U.S. airports enplaned 50,000 passengers each day. By contrast, during 1984, daily enplanements surpassed 1 million. Most importantly, while reduced competition and market saturation may slow the rate of growth somewhat, this trend does not seem likely to change. The FAA estimates that by the turn of the century, enplanements will nearly double the 1984 level. A key force in this growth has been the steady decline in the real cost of air travel.

Given this trend in growth, it is not surprising that the ability to provide adequate system capacity remains the most serious problem facing the U.S. aviation system. Public spending has not kept

pace with this growth. For example, passenger miles per dollar of net public aviation assets—the total value of our aviation system—has jumped from under $5 in 1960 to more than $9 today. While this change may reflect improved productivity, it also reflects our current tendency to invest too late rather than too early. That is, we often wait for demand to develop before adding needed capacity.

Capacity constraints in one part of the system are quickly felt in others. Often, there is a series of sequential interactions among potential bottlenecks—ground access, terminals, aircraft access, runway capacity, and air traffic control.

Let me turn to what I believe the underlying problems are.

Many of today's problems result from factors beyond the control of the FAA. Budget uncertainty and political involvement in technical and operating issues provide good examples. In fact, I believe there are three root causes: First, lack of budget control; second, political interference; and third, organization inefficiency.

Budget problems are of two types: The overall spending level and uncertainty over future funds. Both cause serious problems for the system. An inadequate level of funds can hamper development of long-term capacity—measured today by delays.

In political terms, while there are certainly worse examples of congressional interference in a Federal program, airport programs are subject to the same interest that typifies many "pork barrel" programs. This interest need not always be harmful, but it creates uncertainty as to who is in charge and can greatly increase costs.

Finally, too many layers of oversight and frequent changes in political leadership cause uncertainty as to who controls a decision and how long it will take to make. Civil service rules sometimes limit the FAA's ability to match the existing supply of trained personnel with the demand for service and make it difficult to alleviate morale problems. This is one reason the FAA has not fully recovered from the effects of the 1981 strike of air traffic controllers. In fairness, the FAA is forced to meet several contradictory goals. For example, maximize safety while meeting budget constraints.

Again, congestion and delay are, I believe, the most immediate and most serious economic and management problems facing U.S. aviation. The added costs for airlines and travelers have been estimated at $3 billion a year or more—a "dead-weight" economic loss that shows signs of growing rather than shrinking.

Let me turn to a few solutions—potential solutions. We face complex problems, problems without magic solutions. I will briefly discuss three sets of ideas. First, pricing options that could stretch use of our current facilities; second, a possible new financing approach; and third, institutional changes that could improve decisionmaking.

Being a card-carrying economist, I have to talk about pricing. Better pricing strategies represent a partial but very important part of solving airport capacity problems. They can improve the effectiveness with which we use our existing capacity, buying several years of additional time at many airports. In addition, they can help provide resources to finance necessary capital improvements. At the busiest airports, better pricing will help alleviate short-term capacity problems, even though physical capacity will have to be increased eventually.

A particularly effective use of pricing would focus on problems of location and time of day. Pricing can provide both a direct signal of when and where new capital investment is needed and an efficient means to allocate limited capacity when capital improvements cannot be made.

Most U.S. airports set charges based on average cost pricing. Exceptions in the United States are limited to a few airports that charge peak-period fees for general aviation aircraft. Examples include La Guardia, Miami, and Boston. Most of these examples have turned out to be fairly successful.

Let me turn to a new financing mechanism, one that could be targeted at airport capacity. The high capital costs for new airports and major capacity expansions require new financial mechanisms in addition to reliance on the bond market. In particular, the need for local governments to assemble and acquire large amounts of land many years in advance and the cost to purchase noise easements represent substantial political, organizational, and financial burdens. A revolving fund, or airport bank, is one option that could retain some of the market discipline of bond financing while providing public subsidies for particularly long-term and capital-intensive projects. Infrastructure revolving funds have been implemented in some 16 States and by the end of the decade each State will have a wastewater treatment revolving fund of its own.

A national airport capacity revolving fund should be limited in purpose, however, perhaps limited to land and noise related costs. While loans could be long term and at below market rates, in order to discourage overbuilding, the fund's total involvement in each new airport should be limited.

The third type of approach, institutional changes, are perhaps most relevant for air traffic control. The Federal Government began operation of the air traffic control system in the 1930's. Recently, the Air Transport Association has proposed a new Federal corporation to take over all FAA responsibilities except safety. This was motivated largely by frustration with budgetary and political influence over FAA actions and by belief that a new management, with few restrictions, could operate the system more effectively. Others have proposed a private, for-profit corporation. The potential net gains from this change appear substantial.

A less dramatic approach would be to copy part of the British system and shift responsibility for local air traffic control to the local airport. In particular, providing a new cost burden for local airports would also provide a good opportunity to introduce improved pricing while also helping to alleviate some of the political and management problems associated with the current air traffic control system.

In summary, while the long-term aviation problems we face are significant, most reflect the tremendous success of both the private and public sectors. For some time, however, we have been doing a lot more with a little more. Solutions, however, require changes to traditional budgetary, political and institutional ways of managing the system.

That concludes my remarks, Mr. Chairman. I would be glad to answer any questions.

Senator SARBANES. Thank you, Mr. Mudge.

[The prepared statement of Mr. Mudge follows:]

PREPARED STATEMENT OF RICHARD R. MUDGE

Mr. Chairman, I am pleased to appear before this committee to discuss the economic importance of the nation's aviation system, the long-term problems that we face, and possible ways to meet these problems. By way of background, I am a transportation economist with more than 15 years experience in the public and private sector and at the national and local levels of government. I am Vice President and co-founder of Apogee Research, a Maryland-based firm that specializes in helping to solve the economic, finance, and policy related problems of public works. Until last year, I was Chief of the Public Investment Unit with the Congressional Budget Office.

Much of my testimony today draws on work that Apogee has completed for the National Council on Public Works Improvement.[1] All the comments, reflect my personal opinion.

On balance, the U.S. aviation system has performed well. This is certainly true relative to aviation in other countries and even to most other U.S. modes of infrastructure. Its most serious problems concern congestion and delay -- in turn, signs of aviation's success in the market place. In general, while the seriousness of existing problems should not be dismissed, they are clearly within our ability to solve.

Background on Industry

The nation's aviation system has three major components: airports, aircraft and airlines, and air traffic control. The operation and financing of this system is a combination of public and private sectors.

Airports

The U.S. has 16,300 airports, more than the rest of the world combined. Most serve small planes (called general aviation) exclusively and more than 10,000 are not available for use by the general public. The 5,900 that are open to the public include all airports used by the commercial aviation industry and most of the largest general aviation airports (Figure 1).

Commercial air travel is concentrated at a few airports. Of the nation's 550 commercial airports, only 72 account for 90 percent of passenger traffic -- the top 27 alone handle 69 percent of passenger enplanements.

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[1] Apogee Research, Airports and Airways, (May 1987), and A Consolidated Performance Report On the Nation's Public Works, (August, 1987), prepared for the National Council on Public Works Improvement.

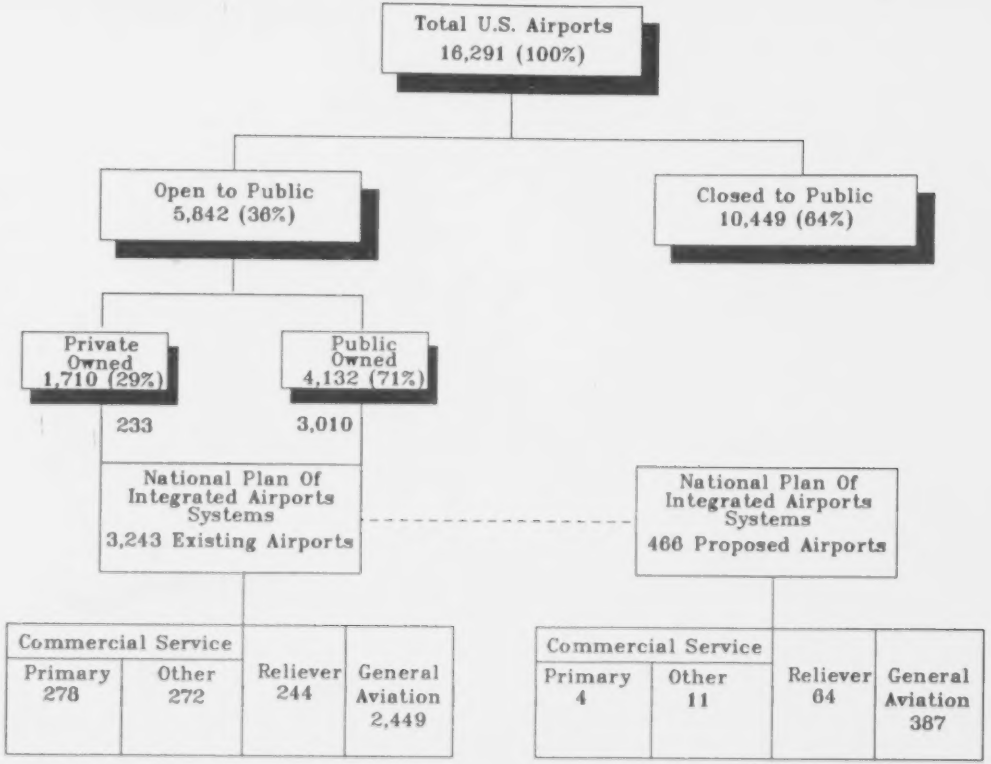


FIGURE 1: NUMBER AND TYPE OF PUBLIC USE AIRPORTS

SOURCE: FEDERAL AVIATION ADMINISTRATION

Most commercial airports are publicly owned and operated, 60 percent by the local community and most others by public authorities. Typically, the larger commercial airports operate as self-sufficient enterprises, with most capital funds provided through the tax-exempt bond market and operating costs financed by landing fees and other direct user charges. Historically, federal grants have covered 20 percent of capital costs for large airports ranging up to 90 percent at some general aviation airports.

These commercial airports serve the general aviation flyer as well. In fact, general aviation traffic exceeds commercial airline traffic at almost every airport smaller than a large FAA hub and at many large hubs as well. Overall there are five times as many general aviation operations at small hubs than there are air carrier takeoffs and landings.

Air Traffic Control

The air traffic control system is owned and operated by the FAA and represents the most direct and significant federal influence on aviation. This system is responsible for the smooth and safe flow of air traffic between airports and during takeoff and landing. Federal expenditures on the air traffic control system exceed $3.7 billion, all but one fourth for operations--mostly salaries for the roughly 14,000 air traffic controllers. The FAA is in the midst of a $16 billion effort (called the National Airspace System Plan) to modernize the air traffic control system.

Aircraft and Airlines

Aircraft make up the final part of the aviation system. Unlike the airports and air traffic control system, these are almost exclusively owned and operated by private firms or individuals.

The vast majority (99 percent) of aircraft are small planes owned by individuals and corporations. In terms of the most visible output of the aviation industry -- the intercity movement of people -- the one percent of the fleet owned by commercial airlines accounts for some 95 percent of all aviation passenger-miles. This imbalance is possible because commercial airliners are much larger in size, travel at faster speeds, and are used more intensively than general aviation aircraft.

The airline industry has undergone dramatic organizational and economic changes over the past ten years, mostly triggered by the end to Federal economic regulation of the industry in 1978. These changes include:

- A revolution in how airlines compete, with a new emphasis on price and a change in the cost structure of every major carrier.

- A wave of mergers that may, in time, reduce current levels of competition. As a result, the recent decline in the real price of air travel may reverse itself.

- An emphasis on the use of airline hubs. This has concentrated traffic at certain airports, adding to congestion in some cases and diverting traffic from major airports in others.

ECONOMIC IMPORTANCE OF AVIATION

The next page shows a simple model of the impact of aviation on the economy. The broad economic and social variables discussed above (GNP, industrial mix, price of air transport, leisure demand, price of competing modes) affect air transport demand. As the demand for aviation increases, public investment in airports and air traffic control is likely to increase as well -- particularly since most public aviation spending is financed by users. This added system capacity can, in turn, stimulate additional aviation demand. Ultimately, both air transport demand and public investment affect the economy.

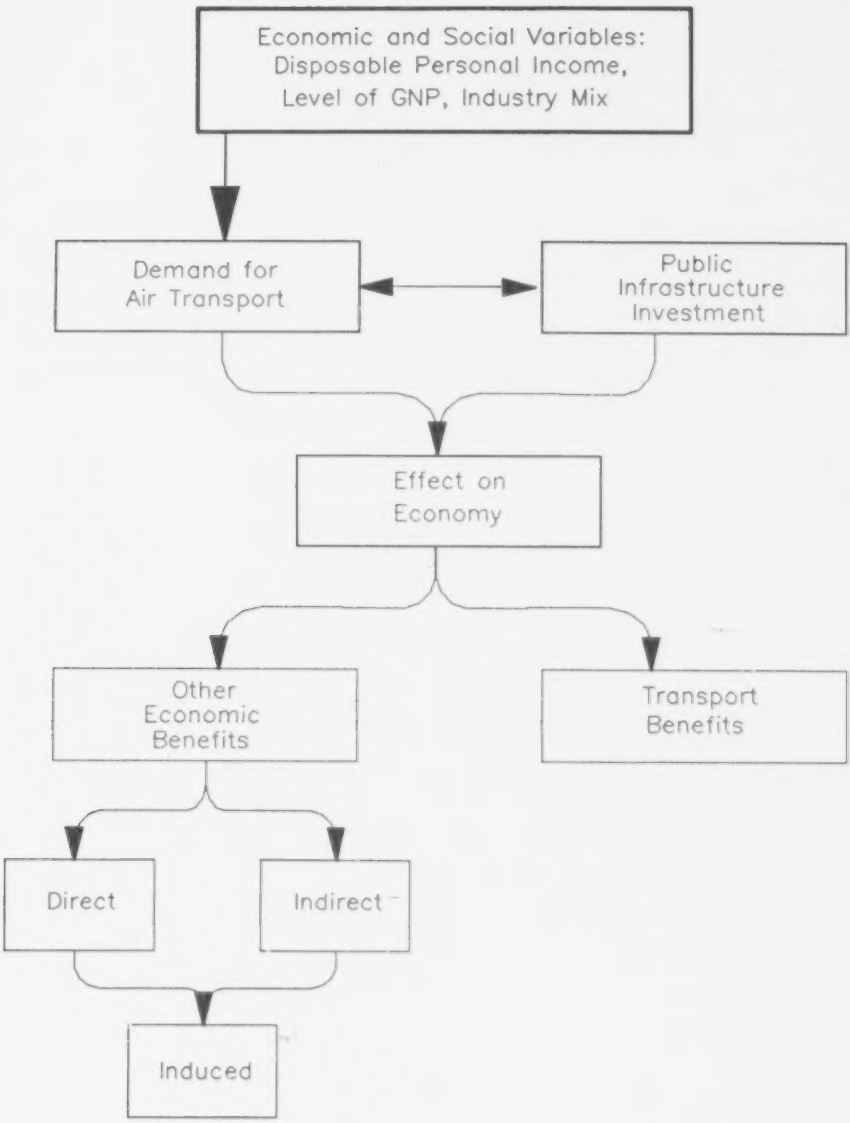
In addition to its importance as part of the nation's infrastructure, aviation is a significant industry on its own. The private portion of the industry -- airlines, general aviation, and civil aircraft manufacturing -- total some $74.5 billion a year in revenues for 1985. Added to this is $8.2 in spending by all levels of government to operate, maintain, and build the nation's airports and air traffic control system. Thus public spending represents about 11 percent of the total spending of $82.7 billion. The ratio of private to public -- about 9 to 1 -- shows the importance of making sure that public funds are:

- spent on projects of the highest priority;

- that the overall level of spending is efficient; and

- that private and public investments are coordinated in some fashion.

As with all of infrastructure, air travel is a derived demand, with use depending largely on the size and structure of the national and international economy. While aviation's size and growth have been driven in part by technological efficiency, the ability to make more effective use of the nation's economic and physical resources is the key to future growth.


Economic and Social Variables:
Disposable Personal Income,
Level of GNP, Industry Mix
Demand for
Air Transport
Public
Infrastructure
Investment
Effect on
Economy
Other
Economic
Benefits
Transport
Benefits
Direct
Indirect
Induced

Without direct and reliable access to the nation's aviation system, most communities find it difficult to attract new firms. For smaller communities and those with restricted commercial airports, general aviation airports often provide the same access -- and therefore generate similar economic benefits, albeit on a smaller scale than commercial airports.

A comparison of the fraction of Gross National Product (GNP) devoted to aviation shows steady growth through the 1950s and 1960s, but with a sharp peak in 1980 followed by six consecutive years of decline (Figure 2). While there are a number of possible explanations for this shift, it may be an early sign that aviation is approaching a mature industry.

One possible explanation for this apparent "maturity" trend includes the recent sharp declines in the real price of air travel -- people may be travelling more but paying less. Indeed in a period of declining real prices for travel, spending on aviation may not be the best measure of industry output. Figure 3 shows that the passenger miles travelled per $1,000 of GNP (measured in constant dollars) has continued to grow, albeit less dramatically than before 1980.

Despite economic deregulation of air carriers, some market restrictions remain. Most importantly, these include the "natural" local monopolies associated with commercial airports and the air traffic control system in general. Others are a function of how aviation is organized and the number of firms that compete for each aspect of the market. These affect the price of air travel and the quality of service. Examples of these restrictions include:

- the limited number of airline reservation systems,
- limits on the availability of gates at some terminals, and
- limits on obtaining landing or takeoff slots at some airports.

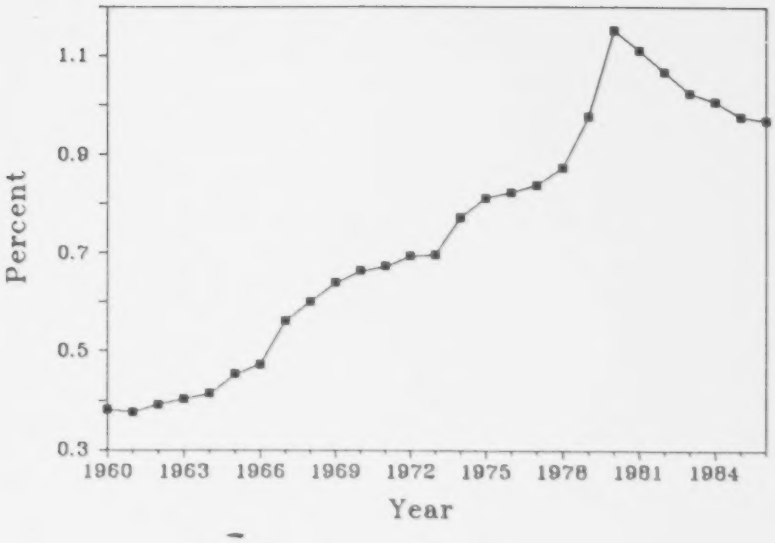


Figure 2. Airline Passenger Revenue As a Percent of GNP

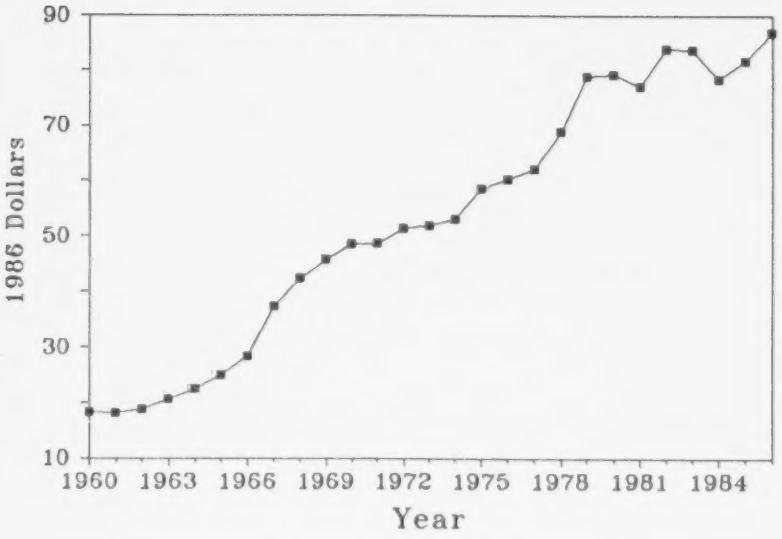


Figure 3. Revenue Passenger Miles Per $1,000 of GNP

CAPACITY CONSTRAINTS

Since 1950, commercial airport activity has increased exponentially. In 1950, U.S. airports enplaned 50,000 passengers each day. During 1984, daily enplanements surpassed 1 million. Most importantly, while reduced competition and market saturation may slow the rate of growth, this trend does not seem likely to change. The FAA estimates that by the turn of the century, enplanements will be nearly double the 1984 level (Figure 4). A key force in this growth has been the steady decline in the real cost of air travel (Figure 5).

Given this trend in growth, it is not surprising that the ability to provide adequate system capacity remains the most serious problem facing the U.S. aviation system. Public spending has not kept pace with this growth. for example, passenger miles per dollar of public aviation assets has jumped from under $5 in 1960 to more than $9 today (1984 dollars). While this change may reflect improved productivity, it is also reflects our current tendency to invest too late rather than too early.

Capacity constraints in one part of the system are quickly felt in others. Often there is a series of sequential interactions among potential bottlenecks -- ground access, terminals, aircraft access, runway capacity, and air traffic control (both the amount of airspace and the physical and managerial ability to handle traffic). Solving capacity problems in one area, often moves problems to the next in line.

The FAA estimates that weather-related delays account for some two-thirds of airline delays in most years. Weather delays are often an indirect measure of congestion since instrument landings greatly limit an airport's effective capacity.[2]

Because of the nationwide nature of the system and the many long flights, local problems are difficult to isolate. Weather-related delays, for example, quickly ripple throughout the system. Similarly, capacity problems at key airports such as Atlanta, Chicago's O'Hare or New York's La Guardia, have national ramifications.

The strength of these interactions has grown with the greater use of airline hubs with their closely timed arrivals and departures. Similarly, capacity problems at commercial airports can cause similar problems at nearby general aviation airports as the smaller planes shift their base of operation.

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[2] Boston's Logan Airport, for example, can handle up to 125 movements per hour under visible flight rules, but, depending on wind direction, as few as 40 movements under instrument flight rules.

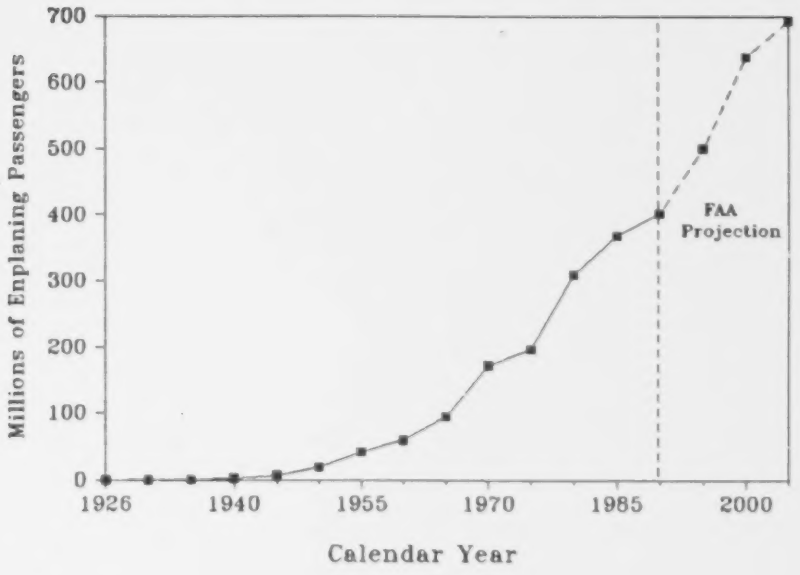


Figure 4. Revenue Passenger Originations

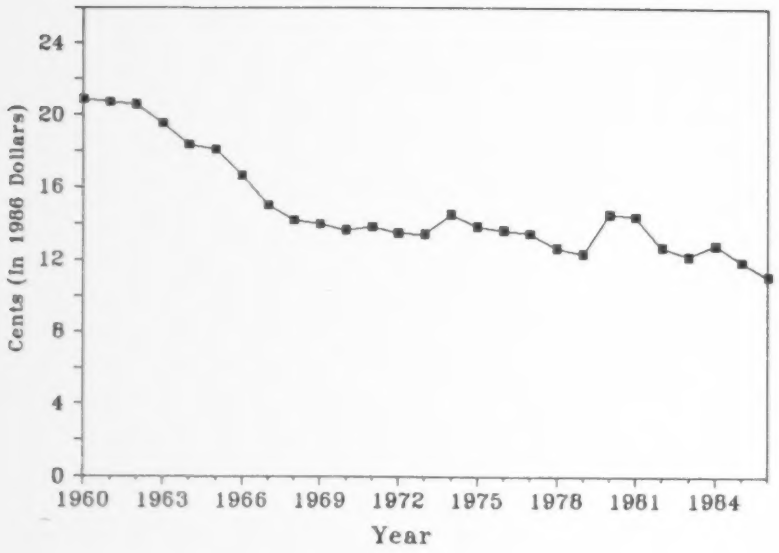


Figure 5. Ailine Passenger Revenue Per Passenger Mile

UNDERLYING PROBLEMS

Many of today's problems of course, result from factors beyond the control of the FAA. Budget uncertainty and political involvement in technical and operating issues, for example. In fact, three root causes can be identified with federal involvement in the airport and airway system:

- o Lack of budget control;
- o Political interference; and
- o Organizational inefficiency.

Budget problems are of two types: the overall spending level and uncertainty over future funds. Both cause serious problems for the system. An inadequate level of funds can hamper development of long-term capacity -- measured today by delays. By deferring the availability of the most up-to-date equipment, safety could eventually be impaired as well. Uncertainty over levels of future funding create planning problems for long-term investment projects. The massive federal budget deficits mean that these problems will not go away soon.

Political While there are certainly worse examples of Congressional interference in a federal program, airport programs are subject to the same interest that typifies many "Pork Barrel" programs. This interest need not always be harmful, but it creates uncertainty as to who is in charge and can greatly increase costs. Witness the "place naming" in appropriation bills that prevents the FAA from consolidating specific facilities.

Organizational Too many layers of oversight and frequent changes in political leadership cause uncertainty as to who controls a decision and how long it will take to make. Civil Service rules limit the FAA's ability to match the existing supply of trained personnel with the demand for service and make it difficult to alleviate morale problems. This is one reason the FAA has not fully recovered from the effects of the 1981 strike of air traffic controllers. The FAA is forced to meet several, contradictory goals: maximize safety while meeting budget constraints is one obvious example.

SPECIFIC MAJOR PROBLEMS

Congestion and delay are the most immediate -- and most serious -- economic and management problems facing U.S. aviation. The added costs for airlines and travellers have been estimated at $3 billion a year or more -- a "dead-weight" economic loss that shows signs of growing rather than shrinking. Management

and pricing changes can help alleviate these problems in the short term.

Long-term capacity of the airports and airways merely reflects the likelihood that delay problems will continue. Completion of the NAS plan should go a long way toward solving the physical capacity problems of the airspace, leaving the most critical bottleneck on the ground.

Program instability is a problem for all infrastructure areas that depend on the federal government for a significant part of their resources. The efficient completion of long-term capital projects requires stable and secure sources of funding. In theory, the Airport and Airways Trust Fund should provide this. The Federal budget crisis as well as the more routine political interference in decision making have made the system less effective than it could be. One result has been the growing state role in finance and administration.

Management of the air traffic control system remains a problem. Despite delays in recovering from the 1981 strike, the system remains relatively safe. Normal bureaucratic problems mean the FAA may be slower than desirable in responding to problems and in implementing new ideas.

Safety remains a long-term concern, particularly in congested areas over larger metropolitan regions. The level of Federal funding appears more than adequate, particularly given the gains that the $16 billion NAS Plan will bring. Constant management attention needs to be paid, particularly in the area of the number of air traffic controllers and their level of training.

Noise is probably the second biggest public complaint (next to delays) about aviation. While the new generation of quieter planes will make major improvements, noise will remain a problem, particularly in built-up areas. Local opposition to aircraft noise has a major effect on the ability to add new airports or expand existing ones. The public costs of purchasing noise easements or adding land use buffers are substantial.

POSSIBLE SOLUTIONS

We face complex problems, problems without magic solutions. I will briefly discuss three sets of ideas:

- pricing options that could improve use of current facilities;
- possible new financing approaches; and

- o institutional changes that could improve decision-making.

Pricing

Better pricing strategies represent a partial but very important part of solving airport capacity problems. They can improve the effectiveness with which we use our existing capacity, buying several years of additional time at many airports. In addition, they can help provide resources to finance necessary capital improvements. At the busiest airports, better pricing will help alleviate short-term capacity problems, even though in most cases physical capacity will still have to be increased eventually.

Targeted Pricing

An even more effective use of pricing would focus on particular problems by location and time-of-day. Pricing can provide both a direct signal of when and where new capital investment is needed and an efficient means to allocate limited capacity when capital improvements can not be made.

Differential Pricing. Most U.S. airports charge based on average cost pricing and the excise taxes for air traffic control and airport grants also represent average prices. Exceptions in the U.S. are limited to a few airports that charge peak-period fees for general aviation aircraft (LaGuardia, Miami, and Boston for example). The use of marginal cost pricing for those facilities and services that have a limited capacity could serve two key purposes: as pricing signals to encourage more efficient use of available resources, and as sources of funds to expand facilities or add new capacity.

Congestion Pricing. This can be seen as a special case of differential pricing, but one designed to expand the capacity of existing airports and extend their useful lives. As with differential pricing in general, the legal ability of airports to impose these charges under existing airline agreements is not clear. The so-called hybrid option (discussed below) to add responsibility for local air traffic control operations to airports may be one way to make congestion fees more practical.

New Financing Mechanisms

Revolving Fund. The high capital costs for new airports and major capacity expansions, may require new financial mechanisms in addition to reliance on bond market. In particular, the need for local governments to assemble and acquire large amounts of land many years in advance and the cost to purchase noise easements represent substantial political, organizational, and

financial burdens. A revolving fund (airport bank) is one option that could retain some of the market discipline of bond financing while providing public subsidies for particularly long-term and capital-intensive projects. Infrastructure revolving funds have been implemented in some 16 states and, by the end of the decade, each state will have a wastewater treatment revolving fund.

A national airport capacity revolving fund should be limited in purpose -- perhaps limited to land and noise related costs. While loans could be long term and at below market rates, in order to discourage overbuilding, the fund's total involvement in each new airport should be limited to about 20 percent of total costs. As with the new state wastewater funds, the Federal government could provide equity capital. This should be financed from aviation user charges, perhaps by using part of the uncommitted surplus. Alternatively, if this proposal is linked to airport defederalization, all or a portion of the funding for large and medium-sized airports could be diverted to this purpose. The fund could be set up as an independent, off-budget corporation -- a practical and politically feasible way to move at least a portion of the trust fund off-budget.

Airport and Airway Trust Fund

This is clearly not a new financing mechanism, but one that has been tied too closely to Washington's budgetary and policy battles. The trust funds current cash balance exceeds $10 billion, more than half of it uncommitted. While spending these sums would add directly to the federal budget deficit, they do indicate the willingness of users to finance capital improvements.

Institutional Changes

"Privatization" of Air Traffic Control

The federal government began operation of the air traffic control system in the 1930s. Recently, the airline trade group (Air Transport Association) proposed a new federal corporation to take over all FAA responsibilities except safety. This was motivated largely by frustration with budgetary and political influence over FAA actions and by belief that a new management, with few restrictions, could operate the system more effectively. Others have proposed a private, for-profit corporation. The potential net gains from this change appear substantial. The political problems of removing responsibility for most federal aviation activities from the Congress, however, make it unlikely that it will be implemented. Further, transition costs could be high.

Hybrid Control

A less dramatic change would be to copy part of the British

approach and shift responsibility for local air traffic control to the local airport. By combining control over all local airspace with airport functions, it should be possible to improve the overall capacity by coordinating the use of hubs and relievers. In particular, a new cost burden for local airports would provide a good opportunity to introduce improved pricing while also helping to alleviate some of the political and management problems often associated with the current air traffic control system. As in Britain, safety regulations including training requirements for all air traffic controllers would remain with the FAA. One serious problem with this scheme, however, is that it may be more difficult to make coordinated technical changes (such as contained in the NAS Plan) in a fragmented system.

That concludes my prepared remarks, Mr. Chairman, I would be pleased to answer any questions the Committee might have.

Senator SARBANES. Gentlemen, we are most appreciative to the four of you for some very helpful and perceptive testimony.

I don't want to appear to be addressing the symptoms and taking a band-aid approach, because you have all warned against that, and I think persuasively. But, nevertheless, given the limited time period for dealing with this problem in a fundamental way, could you give us a list of steps that could be taken over the short or medium term that could have an impact on the problems that we confront?

If you were heading the FAA—I guess not even that—you have to be higher up because the FAA gets constrained by what comes down to them. If you were in a position to give a good green light—say, head of the FAA or probably in an even higher position—what would you say could be done fairly quickly and effectively?

Mr. MURPHY. Mr. Chairman, I'll make a bold statement. I think one of the big lacks—and I don't know how my compatriots feel about this—is the lack of real strong aviation leadership. We really miss the late Senator Mike Monroney very much. We miss a "Mr. Aviation." We don't have a big advocate. We don't have an advocate in the White House. We haven't for a long time.

Senator Ford is new in his chairmanship of the Aviation Committee and he's doing a splendid job.

Two, as a veteran of the FAA, I think the situation of the revolving top versus the settled first echelon is a very serious situation. In other words, Mr. McArtor is the Administrator and we are fairly confident he won't be the Administrator for more than 16 or 18 months, regardless of election results. If he's doing a splendid job, that's sort of a shame. Mr. John McLucas was doing a splendid job as FAA Administrator, but he was bound to a 16-month term in the same sort of circumstances.

So if you don't like something at the first level of the civil service you can wait out an Administrator's ideas and put those off to one side.

So I think, as Senators Ford, Kassebaum, Lautenberg, and Byrd have advocated in S. 1600, a set term for the Administrator would be an enormous step forward, one that would overlap the presidential election.

Three, I think we have to step up and be counted on this airport situation. It's very difficult for a locally elected mayor or city council to overcome the resistance to airport expansion.

I've used the expression—everybody recognizes the necessity of sewage disposal plants and airports, but nobody wants either as a neighbor. And that's true. I have been at many public hearings, as have these other gentlemen, and you are usually the last person to speak at 11 o'clock at night after 50 antiairport-expansion people have had their way.

You are going to face that at BWI with your new parallel runway I'm certain. There's going to be a lot of resistance and that airport in order to accommodate the needs of its growth needs that parallel runway very badly. It's going to be a tough fight.

So we have to have more of a will to overcome that or make a conscious political decision to check with it, we're not going to expand this airport. I think we don't have an awful lot of wiggle room left in that arena.

Mr. BAKER. I think I agree with Mr. Murphy almost completely. In fact, when you were asking the question, I jotted down a note before he started to speak which was "national will." We have to decide we want a system that works. We have to have a national thrust to do that. That's only going to happen with salesmanship at the national level because you're putting a burden on the local politician that's not fair. He can't do the job because the individual in the community that dosn't fly doesn't perceive the national value of an airport which impacts on his quality of life, aspirations, and so forth.

There are some near term short range quick fixes that are out there. However, we are in a technical industry and we aren't going to have a baby in one month by making nine ladies pregnant. Throwing money at the problem is not the solution. We have to know where we're trying to go first. But we can buy quick capacity at airports.

Representative FISH. What did you just say?

Mr. BAKER. I'm sorry, sir.

Representative FISH. You said it doesn't do any good to throw money at the problem and then what did you say right after that?

Mr. BAKER. I'm sorry. He was coughing while you were talking, Congressman Fish, plus I've been flying 43 years and I'm deaf as a board. [Laughter.]

The point I think I was making was that, yes, there are some quick fixes. We suffer in the procurement side terribly. The FAA is constrained, and then we have a panic, and then they want to go out and buy unproved equipment. GAO has been very critical of this. So we seem to go from one end of the pendulum to the other and we haven't reached any kind of equilibrium in terms of productively putting the system together.

As Mr. Murphy said—and we were both in the FAA—we have had a new Administrator every 2.7 years since 1958. We have no 2.7-year program at the national level in aviation. They are all long-term programs. The modernization is a 15-year minimum effort. A new airport is a 10-year effort. We have had transient management and we have had, I would say somewhat charitably, a suspect selection process for the Administrator's job.

There have been occasions when the Administrator's job has been treated as a reward for political support and there have been other times when it's been perceived to be an economic job and so forth. It is a job that requires a broad-based background in management first, and we have not used that as a criteria. That's a terribly diverse and complex organization with many, many responsibilities.

A separate FAA in some fashion I think is a consensus that the industry has ultimately come to. It has been a hard sell. I've been singing this song for some time and increasingly the chorus has become larger. But at the time the FAA was integrated into the Department of Transportation, the Nixon administration was selling the concept of intermodal planning. Well, I think that's almost oxymoronic in the case of DOT in a number of areas.

One is there is no common connection between aviation and the other modes of transportation. As a result, we've had our feet shoved in the mud with the highways and the railways and the

seaports rather than being treated as a dynamic industry which has tremendous potential still in it and, indeed, as the most efficient way to have a national system. We don't have to deface the face of the Earth to make a national aviation system. All we need is a national will and some quality management. I think that's where the problem has been.

So without evading your question, Mr. Chairman, there are a few near-term fixes and I think that's what prompted me to say earlier that it's time we level with the American public that we aren't going to solve the basic problems overnight. Every one of us in this industry is going to suffer while we pay for our past sins—our past sins in terms of lacking courage to demand better from Congress, better from the Department of Transportation, better from various administrations. And if we don't first concede that, we can't go back to building the wall from the bottom up rather than the top down, which seems to be how we're doing it now.

Senator SARBANES. Does anybody else want to add anything?

Mr. MUDGE. I think our institutional problems are probably the most serious ones. We have a system that's very, very well designed to solve the problems of the 1970's, not the 1980's, and I think there are ways in which we could change how funding is provided and how the air traffic control system is managed.

For example, today, there is much too much focus on the Airport and Airway Trust Fund and the cash balance within the trust fund rather than trying to get on with solving future problems.

Similarly, the way we provide airport grants is designed to spread money around to many, many different airports. Again, that was designed to fit the problems of the 1960's and 1970's. Today, our major aviation problems reflect airport capacity which include the very, very lumpy cost of building a new airport and I suggest we need to reform the Airport and Airway Trust Fund to do something that provides funds in those large lumps.

Senator SARBANES. Congressman Scheuer.

Representative SCHEUER. Well, I'm very impressed with the testimony, Mr. Chairman. I have had a lot of experience in the last couple of years on this whole matter as chairman of a subcommittee of the Science Committee that has jurisdiction over the terminal Doppler radar program that is designed to prevent wind shear, and it's a desperately serious problem.

We have had in the last few years or so about 400 or 500 fatalities from wind shear. We had a 1982 wind shear crash in New Orleans that killed 153 people. And yet the FAA, who are the good guys in this thing, under OMB pressure—yet the FAA removed New Orleans as the site of a terminal Doppler program shortly after the New Orleans crash.

When they first announced the program, the FAA requested 106 terminal Doppler radar sites for our system and I applauded that. I thought then that they were right on target. The administration came back and approved 15. Now 106 terminal Doppler radar sites could have protected about 90 percent of the airline traveling public. Fifteen would provide protection for 40 percent of the public. The total cost of the whole operation was estimated to be about $500 million, about a tenth of the funds in the trust fund, but yet the administration—it has finally come up somewhat due

to persistent urging by the Congress, by myself—I sent a letter to Jim Miller signed by 64 Members of Congress—the persistent urging of the Congress, and I must say, an FAA that was professional, that was as obdurate as they could be, and that stuck to their guns.

The administration is moving up gradually toward that 106 level and I hope they will be there, but it pains me that we would have suffered 400 or 500 deaths just in the last few years from wind shear, have the technology in hand to do something about it, have the money sitting there in the trust fund, and still have an administration that refuses to spend that money.

I remember as a pilot during World War II when I was training out in Lancaster Air Base in the Mojave Desert in California, we had some excellent pilots go out on training missions of all kinds and they flew their planes into the ground. Nobody could understand it. We thought they had an acute attack of indigestion. They thought they might have had a heart attack. Now, in retrospect, it becomes clear that they were victims of wind shear.

Well, we didn't know about wind shear then but we know about it now. We have the technology to do it now and we have the funds sitting in the Aviation Trust Fund, and I think it's a bloody disgrace that our society, represented by the Government in power, can't release those funds for the perfectly identifiable purpose for which the air traveling public paid into the fund, to apply this extraordinary new technology that detects the approach of wind shear and bypasses the control tower and shoots the bells and the guns and the whistles right into the pilot's cabin.

I have thoroughly enjoyed the testimony. I think every one of you made a great contribution, and this is a desperately important subject and I again congratulate our chairman for having focused on it.

Senator SARBANES. Thank you.

Congressman Fish.

Representative FISH. Thank you, Mr. Chairman. I, too, want to commend you for convening these hearings which are extremely important and I welcome our distinguished panelists.

Air service is indispensable to American life today. Tens of millions of people rely on airlines for business and pleasure travel. And, of course, millions use it even without getting on an airplane, through packages and air mail.

We have many issues to consider, such as service reliability, capacity, and, of course, safety. We Members of Congress, I think, have a public trust to fulfill and our attention must be focused on investigating the adequacy of our air transportation system and this hearing will explore public and private investment in airports and airways.

Can existing airport facilities handle the huge increase in passengers and, if not, what can be done? We have some very good testimony in this regard.

Mr. Baker, you called it a system failure and Mr. Mudge gave us the statistics of an increase in passengers—in 1950, 50,000 a day to 1 million today. That's a 20-fold increase. So a system failure is not too surprising.

Mr. BAKER. Well, I think the numbers tend to distort the perspective a little bit when you recognize we are flying altogether different machines now, too. The capacity of the machine itself has gone up dramatically.

However, clearly, the demand has gone well beyond any forecast expectations, helped along I think by less than adequate study on the deregulation question.

Representative FISH. I wonder if you would care to comment or any of you would care to comment on some of the institutional changes that Mr. Mudge referred to, particularly in the pricing field, new financing mechanisms, and the privatization of air traffic control?

Mr. BAKER. As long as I have the mike, I'll continue on. I think that those suggestions are all—we've heard them all from the economists over and over to the point of nausea. They are all prescriptions to constrain the system and if indeed that's the national will, I think that that should be studied.

But I think until we ascertain what the national will is—and I believe it's a network transportation system rather than a mass transit system—we have UMTA to handle that—that the economists' prescription for shrinking, letting the marketplace control, doesn't track in my mind with a Federal system where indeed we are charged—you all are charged with ensuring a nation's transportation system, because there is no other commercial transportation.

I was raised out in western Nebraska and now if you don't own an airplane or rent a car, you aren't going to get there. The train no longer runs out there because there isn't population density to sustain it. There are no buses running any longer. And air carrier service is not available because the carriers priced themselves out of those kind of communities.

If indeed there's going to be network of transportation available—public transportation—it seems to me a balanced system has to exist and I don't think you should be a second-class citizen because you live in Nebraska or Wyoming or upstate New York or any of the other areas where population density won't sustain a major airport or regular air carrier service.

Representative FISH. Mr. Judy stressed the shortage of airports, inadequate airport capacity—in fact, he used the words "crisis proportion." As did other witnesses, Mr. Judy called for national policy. Then, Mr. Baker, if I heard you correctly, you said you did not expect in your lifetime to see another major airport built.

Mr. BAKER. I think that's true. The only one of which I'm aware that there's any effort being made is in Denver currently to replace Stapleton, and we're going to lose one to get one. So we aren't adding dramatically in that particular case.

New airports are 10- and 15-year projects if everything goes properly, and money doesn't seem to be our problem. Leadership is our problem. We can't even get the improvements that every one of the airport operators on this panel or that will appear will tell you will buy quick capacity on those airports. We can't get those things done, let alone do a major airport, because of the hodgepodge of different conflicting laws addressing disparate perspectives. And if we can't put together the various competing perspectives and come up

with some sort of a national will on this issue, we're going to be having this kind of a hearing and talking these subjects 10 years from now with a smaller system than we have now and with a more concentrated industry where the oligopoly, in fact, will occur that some of the gloomsayers forecast at the time of the deregulation.

Representative FISH. Therefore, we're talking investment in facilities and investment in equipment and, as you said earlier, it's a good idea to know where we're going.

Now do we know where we're going or do we need to have a long-range view, a study made, to identify the needs of aviation in the future?

Mr. BAKER. I think, Congressman Fish, we have to do that. I think we are now in the process of emulating the Internal Revenue Code. We're running around sticking patches on everywhere. We have now built a bundle of patches to the point we don't know what we started out to do. Until we decide what the national will is and how we balance the various competing things—and there are competing perspectives—I don't think we are going to see a coherent system.

I subscribe to Mr. Murphy's perspective. If we don't get something other than transient political management at the high levels in transportation policy, you're going to continue to see this fit and start, no-philosophical thrust kind of activity where you all in Congress get the biggest heat because you are being screamed at by the constituency to do something even if it's wrong. Unfortunately, I think the law of averages says that in that environment you're going to hit on both sides of that equation with some frequency. I think that's what we're doing. We're throwing money at problems that really aren't the problems.

The national dialogue is basically on the chart on the left up there—the midair collision. Congressman Scheuer indicated, and he's right, we don't kill people in midair collisions in aviation. We kill people in weather accidents in aviation, and the 600 number he quoted is accurate. The last major accidents we've had have been either system accidents or weather accidents, with a heavy predominance on weather. Dallas, Kenner, Louisiana——

Representative SCHEUER. Excuse me, Mr. Baker. When you say weather, that Dallas accident, the Delta accident, was wind shear.

Mr. BAKER. It was wind shear, sure.

Representative SCHEUER. And that's preventable, is it not?

Mr. BAKER. You had one in your backyard, a very terrible accident, on a flight from New Orleans to New York, which was clearly a wind shear accident.

Representative SCHEUER. And that was preventable.

Mr. BAKER. Sure they're preventable. All you need to do is get the information into the cockpit. The system isn't working to deliver those services. The pilot knows less now about what's going on out there than he did in the past. From the general aviation perspective, half of the fatal accidents we have a year are weather related, and we're seeing almost a systematic dismantling of the system that is to convey that information to the user, at a cost of $450 million.

Representative FISH. Now let's get to the human error.

Representative SCHEUER. Ham, would you yield to me for a unanimous-consent request?

Representative FISH. Sure.

Representative SCHEUER. I ask unanimous consent, Mr. Chairman, to introduce into the record the correspondence between me and Jim Miller on the subject of accelerating the installation of this terminal Doppler radar system. My letter was signed by 63 other Members of Congress.

I have always found Jim Miller to be a thoroughly pleasant, genial, attractive, and highly intelligent fellow, but nevertheless, his answer to our letter—the correspondence of May and June of last year—represents the viewpoint of an administration that will absolutely not for any reason spend significant public moneys to achieve a highly critical public purpose involving the health and safety and indeed the survival of hundreds and hundreds of Americans.

Senator SARBANES. Without objection, the correspondence will be included in the record at this point.

[The correspondence follows:]

Congress of the United States
House of Representatives
Washington, D.C. 20515

May 22, 1986

Hon. James C. Miller, III
Director
Office of Management and Budget
Executive Office Building
Washington, D.C. 20503

Dear Mr. Miller:

We are very concerned with the Office of Management and Budget's recent decision to limit the Terminal Doppler Weather Radar Program to 15 units, rather than the 100 units requested by the Federal Aviation Administration.

Over 50 percent of all air carrier accidents are in some way attributable to weather conditions. By far the most serious weather hazard affecting aviation is the wind shear or microburst, which took over 100 lives in each of the recent airline crashes at New York, New Orleans, and Dallas. We are still learning about these deadly phenomena -- in fact, microbursts were only discovered in the past decade. But we do know that many wind shears cannot be successfully negotiated in an aircraft, and that the only technology which provides the pilot with the capability of avoiding such shears in a timely and reliable manner is terminal doppler radar.

Two years ago, the FAA requested funding from OMB to accelerate its procurement of terminal radar. OMB, under your predecessor, demurred and insisted that the FAA demonstrate the cost-effectiveness of a terminal doppler system. A 1985 study by the Martin-Marietta Corporation did just that, showing that installation of 146 radar units would in fact be cost-effective and that installation of 100 radar units would reduce wind shear risk nationwide by 90 percent. Apparently, you have remained unconvinced. FAA's FY 1987 budget requests that only 15 airports, or 40 percent of the flying public, receive protection from terminal doppler radar.

We feel that your decision is ill-advised not only because of safety considerations, but also because of considerations based on fundamental fairness. The flying public has for years paid a tax into the multi-billion dollar Airport and Airway Trust Fund with the understanding that the Fund would finance safety improvements exactly like terminal doppler radar. We realize that under current budgetary constraints, the cost of terminal doppler radar is substantial. However, the system, which could be financed by a small fraction of the Trust Fund, would pay for itself by preventing a single commercial airline crash over its 25-year design lifetime.

We ask that you supply us with a justification for the OMB decision to limit the Terminal Doppler Weather Radar Program to 15 systems. In addition, we hope that you will reconsider your decision and allow the FAA to proceed with a robust weather radar system which will make the skies much safer for all of us.

Sincerely,

JAMES H. SCHEUER

MARIO BIAGGI

GEORGE W. CROCKETT, JR.

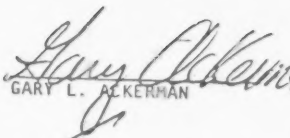
ROBERT LINDSAY THOMAS

JOE KOLTER

FRANK McCLOSKEY

THOMAS J. DOWNEY

TIM VALENTINE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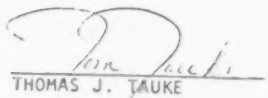
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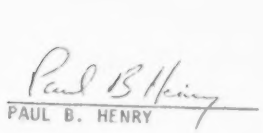
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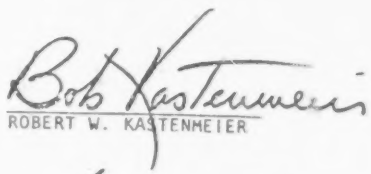
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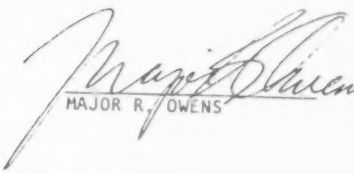
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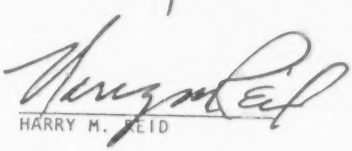
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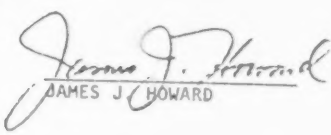
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MATTHEW G. MARTINEZ

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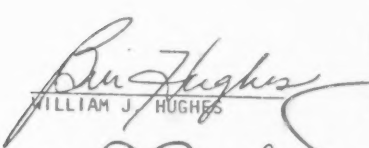
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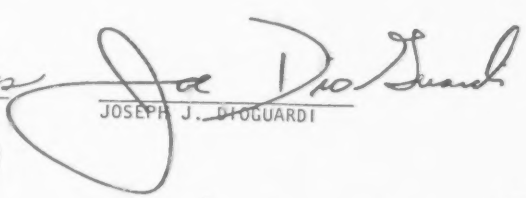
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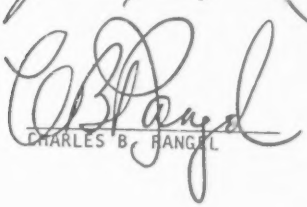
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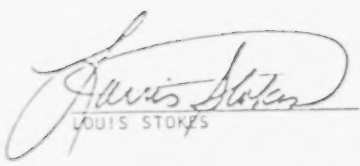

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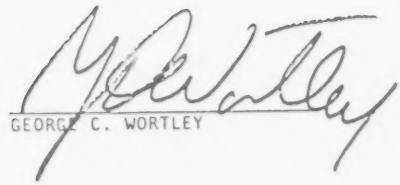

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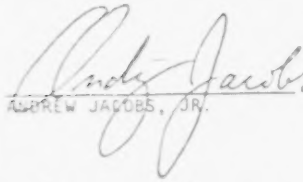

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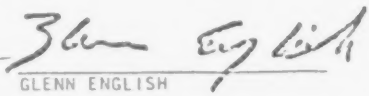

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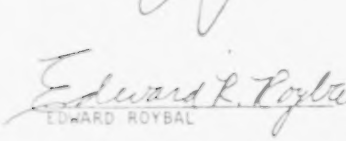

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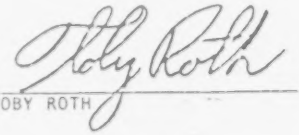

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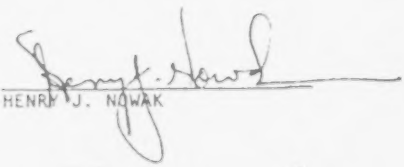

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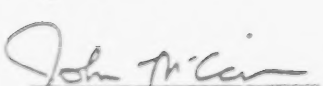

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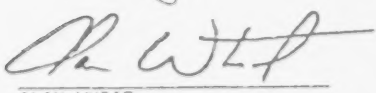

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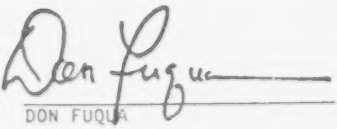
DAN GLICKMAN



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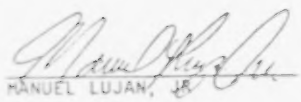

MANUEL LUJAN, JR.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

JUN 18 1986

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WASHINGTON OFFICE
JAMES H. SCHEUER, M.C.

Honorable James H. Scheuer
Chairman, Subcommittee on Natural
Resources, Agriculture Research
and Environment
Committee on Science and Technology
U.S. House of Representatives
Washington, D. C. 20515

Dear Jim:

Thank you for the recent letter which you and 64 other members of Congress sent to me suggesting that more than 15 terminal doppler weather radar (TDWR) systems ought to be acquired by the Federal Aviation Administration (FAA). I welcome the opportunity to share with you our views on this important program.

First, let me assure you that we appreciate fully how important timely and accurate weather information is to the FAA, to pilots, and to others. There is a continuing stream of new technology being introduced in the areas of weather detection, weather prediction, and weather information dissemination. Even in this period of budgetary restraint, state-of-the-art weather systems are being funded for the three Federal departments with major meteorological responsibilities -- the Departments of Transportation, Commerce, and Defense.

Due to development and production lead times, an optimal TDWR system could not be deployed until 1990 or beyond. Operational software has not been developed and the experiments to date have relied upon laboratory-grade software and hardware to prove the concept of TDWR. You should also be aware that the General Accounting Office (GAO) testified before the Senate Commerce Committee in opposition to a rapid procurement strategy -- GAO is concerned that without competitive testing the system may be unduly costly or may be sub-optimal in performance. We respect those concerns, but are prepared to take certain procurement risks because, in our view, something would be better than nothing at the 15 key locations. The FAA proposes a temporary, fast-track approach to the 15 locations by modifying 15 long-range, next generation weather radar (NEXRAD) units to a terminal doppler configuration. Procurement plans for NEXRAD terminal derivatives are well advanced, and these NEXRAD terminal derivatives should be deployed starting in 1989. Once an optimized terminal doppler system is developed, the NEXRAD derivatives would be remodified back to their standard configuration and relocated to sites already planned for NEXRAD.

c: Tom Geo B.

Aviation safety has always been a sensitive and emotional issue. We realize that data which demonstrate the safety of our air transportation system is often just cast aside whenever there is an accident. Our nation has an expectation that aviation safety should be perfect -- no crashes, no accidents, no injuries, no fatalities. I share that expectation. The Government and the aviation industry spend billions toward that expectation every year. Clearly, thanks to the FAA, the air safety record is much stronger than the safety record for almost all other forms of transportation.

In conclusion, I believe that the TDWR approach outlined in the budget is prudent. As we learn more about wind shear, how to deal with it, and as new technology emerges for detecting it, we will take advantage of those advances.

Sincerely yours,

James C. Miller III
Director

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON D.C. 20503

AUG 08 1986 RECEIVED

WASHINGTON OFFICE
JAMES H. SCHEUER, M.C.

Honorable James H. Scheuer
U.S. House of Representatives
Washington, D.C. 20515

Dear Jim:

This letter is a follow up to our recent conversation regarding wind shear detection systems at airports.

The Administration is fully committed to providing wind shear detection systems at all airports where wind shear represents a hazard to aviation operations. Because of this commitment, the Administration has already taken several steps and will take more as technological obstacles are overcome.

By the end of 1986, 110 airports will have ground-based wind shear detection systems, called Low Level Wind Shear Alert Systems (LLWASs). In order to improve the ability of LLWASs to detect wind shear, these systems will be expanded from six to eleven sensors by the end of this decade. The LLWAS is the best detection system today, but, because it takes wind readings only at specific ground level cites, it has operational limitations.

Realizing the limitations of even improved LLWASs, the Administration has embarked on a project to provide new, doppler radar devices at 14 major airports with a high risk of wind shear and at the Federal Aviation Administration's technical center in Atlantic City. This project will reconfigure 15 units of long-range, next generation weather radar (NEXRAD) units, so that they can detect severe weather patterns at these airports. However, because these NEXRAD units were not initially designed for terminal operations, but rather for high altitude, en route weather surveillance, they must be altered for the detection of severe weather patterns at terminals. They are an interim solution, while a permanent and more appropriate solution is developed.

In order to develop an optimal solution, the Administration is committed to designing and testing a new generation of terminal weather radar. Referred to as Terminal Doppler Weather Radar (TDWR), experimentation and testing of this new technology is currently taking place. In the near future, field tests will be completed, and it is expected that technological and algorithmic problems will be resolved. At that time, a decision will be made on final production and deployment, with our primary concern being continued improvement to the safety of our airspace system.

Finally, experts are also studying the possibilities of aircraft-based detection systems for severe weather, including wind shear. Any results from these studies will be factored into a final decision regarding TDWR production and deployment.

I believe it is quite evident that this Administration has taken and will continue to take a very supportive position in regard to wind shear and other dangerous weather detection. Any delays in deploying new and effective systems have been due solely to normal technological, installation, and testing delays. As new and better technology has become available and proven, this Administration has consistently supported its introduction where needed. Furthermore, this Administration has been willing to implement interim solutions when clearly needed, as evidenced by our commitment to reconfigure and deploy 15 NEXRAD units. When TDWR research and design is completed, it will receive immediate and complete attention.

Sincerely yours,

James C. Miller III
Director

Senator SARBANES. Congressman Fish.

Representative FISH. Thank you, Mr. Chairman.

Mr. Chairman, the testimony is largely about the infrastructure and specifically airport capacity, but I am advised by the committee staff that many air safety reports in the last decade point not to inadequate equipment but to human error and I'd like to address that.

It would seem to me that, therefore, investment in human resources should figure prominantly in planning for the future needs of our air transportation system that we have been discussing here this morning.

Would any of the witnesses wish to comment on this critical human dimension issue?

Mr. BAKER. I think there's unanimity, Congressman Fish, on that. In fact, ATA and ourselves have had a major effort on this whole human factor side because clearly a high percentage of actions we have involve at least some human error.

One of the concerns, as we get more and more automated, is whether we're not putting man into a less and less efficient posture because he is not a good monitor. Man is an innovator and does things when action is required, but if you have any imagination monitoring becomes terribly boring and soon you drift off into reveries other than paying attention to your business.

One of the concerns we're having as we automate is we're transferring the problem of human factors from one area of manual operation of controls and so forth into another which is an area where man doesn't do well.

So we are all advocates of major effort in human factors research, and very little money has been spent and the industry has been unanimous—ATA, ourselves, everyone you talk to—that we have to address this. This dialogue has been going on for years.

Representative FISH. When you speak of human resources, are we talking about cockpit management, the retraining of pilots and crew, stressing skills and communication for team effort and flight simulators of disasters and training of crews to react to emergency situations?

Mr. BAKER. That's exactly what we're talking about and, in addition, providing the controller with the same kinds of studies to demonstrate that we are in fact not putting him in an increasingly impossible situation, so that the burnout problems and so forth don't become exacerbated by a system which he has less and less control over and the computer has more and more.

Representative FISH. Thank you. Thank you, Mr. Chairman.

Senator SARBANES. Gentlemen, thank you very much. This was a very helpful panel. I would just make this concluding observation on my own part.

I agree with the fundamental thrust of the testimony that we need a coherent, coordinated, overall plan as to where we're going and how we propose to get there. I also think, though, at the same time—and I don't regard it as inconsistent—we need to say that there's an immediate problem and there are 1, 2, 3, 4, 5, 6 steps that can be taken which will have some payoff. Congressman Scheuer has made some suggestions, and there must be others. This doesn't represent a long-run solution. It may be a palliative. It

may only ameliorate the situation. But we have an immediate problem and it will get worse and, so while we have to think about 10 or 15 years from now, we also need to think about right now.

Mr. Judy made the point that a lot of this was a matter of scheduling arrangements—we're missing the point. On the other hand, in the short run this might provide some relief. The Government starts work here in Washington at 8 o'clock in the morning and private business starts 9 or 9:30 and that reflects coordinated effort to diminish the strain on the highways and the trains.

Mr. JUDY. Let me make it clear and say that that's a temporary thing. Then I must point out that we put a temporary program in in 1969 called the high density rule, which is still in place today.

Senator SARBANES. That's a good point. That's what happens when you don't combine the short- and medium-run list that I'm talking about with the longer run perspective that both Mr. Murphy and Mr. Baker and all of you actually were emphasizing. So you need to do both, but I think we have to operate at both levels. Otherwise, we're not going to get some response to the short run.

Mr. JUDY. As long as we have an upfront Federal plan and we have an overall direction that the American people have signed off on which we're funding and moving forward, we are for all of these interim programs.

But the problem is, we put the interim programs in and that becomes a critical base for nonaction.

Senator SARBANES. Well, that's a good point.

Mr. JUDY. That's the problem. We know that and we're tired of it. We've seen it go on since 1969. We're saying we want the plan spelled out and we'll move forward. Yes, we'll look at scheduling and look at other things.

Another thing is that we have to separate safety out of this infrastructure issue. It has dominated this discussion. You're talking about an addition of two lanes to a highway system and we're busy talking about how we can improve the technology of the tire to prevent deaths on the highway.

We still have the capacity problem to deal with. I'm not saying some safety things don't add capacity, like the Doppler. In all fairness, it does. During critical peaks it gives more confidence to move the aircraft off the field and that's one of the intricate things about aviation. There is a transfer of safety to capacity and capacity to safety. But I think somewhere we have to get at this capacity situation and actual infrastructure and get underway with that and try to keep safety, as important as it is, in its appropriate role.

Senator SARBANES. I don't agree with that. I think we have to encompass them all within a coherent and comprehensive approach. If we try to exclude one or the other, we will set them at odds with each other and that will help to drag down the effort to achieve tangible progress.

As I perceive it, we need a program that permits us to say to people, "Well, now here it is. It makes sense. This is where we're going in the long run, the medium run and the short run."

Mr. JUDY. Yes.

Senator SARBANES. In other words, what we're doing now will give you some immediate relief, but by doing it we're not preclud-

ing what we need to do in the long run. That's been the problem. It's not an either/or on safety or capacity. It's more short run and long run. We have to encompass both of those in our thinking.

Mr. JUDY. No question, Mr. Chairman.

Mr. BAKER. Mr. Chairman, the concern, though, is that you can't let technicians define what the national policy is.

Senator SARBANES. Fair enough.

Mr. BAKER. And that indeed is what we've been working under, and I think that concern scares us all.

Mr. JUDY. We'd like a bad plan from Congress. We don't even have that.

Mr. BAKER. That's one of the things that really——

Representative SCHEUER. Mr. Baker, I agree with you, you can't let technicians do it. You also can't let radical ideologues do it.

Mr. BAKER. True. That's why we're such a temperate group. [Laughter.]

Senator SARBANES. Gentlemen, thank you very much. You have been very helpful.

If the next panel would come forward, we have Spencer Dickerson, the vice president of the American Association of Airport Executives; Ted Mathison, administrator, Maryland State Aviation Administration; and Robert Aaronson, first vice chairman of the Airport Operators Council International, and the director of aviation for the Port Authority of New York and New Jersey.

Gentlemen, why don't we just start with Mr. Aaronson and move right across. If you could summarize your statements, we will include the full statements in the record and then we'll go from that to questions.

STATEMENT OF ROBERT J. AARONSON, FIRST VICE CHAIRMAN, AIRPORT OPERATORS COUNCIL INTERNATIONAL, AND AVIATION DIRECTOR, PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Mr. AARONSON. Thank you, Mr. Chairman.

I am Robert J. Aaronson, first vice chairman of the Airport Operators Council International, known as AOCI, and director of aviation for the Port Authority of New York and New Jersey, which operates John F. Kennedy International, Newark International, and La Guardia Airports.

As the chairman may recall, I learned my trade in Maryland and I currently have the opportunity to apply some of the lessons learned to the area represented by Representative Scheuer.

I am very pleased to testify today on behalf of AOCI which represents the governmental bodies that own and operate the major air carrier airports in the United States and throughout the world.

We would like to credit the Joint Economic Committee for holding these timely hearings and focusing attention on the critical problems facing aviation infrastructure today. Our testimony will focus on the following points.

Our aviation infrastructure faces a monumental crisis that is growing at an accelerated rate. The lack of airport capacity is now emerging as the weakest link in the national air transportation system. A Federal role in effective long-range master planning is

needed to increase existing system capacity and to promote new airports. The administration and Congress must immediately commit existing resources in the Airport and Airway Trust Fund and establish policies once and for all to ensure that such resources are not held hostage to the Federal deficit. Concerted Federal, local, and aviation industry actions must be taken immediately to increase investment in airports and provide airport operators with the financing capability we need.

Simply put, we face a crisis in our air transportation system today. Our concerns center not only on present aviation problems, but more importantly, the critical shortage of capacity for the future. While Congress focuses on the symptoms of inadequate capacity—flight delays, lost luggage, near misses, and so forth—the causes are largely neglected.

The Nation's aviation infrastructure is in deep trouble. Demand already exceeds the physical capacity of existing facilities, but there is still inadequate realistic effort being made to expand for future requirements.

The air transportation system is a critical linchpin to our national economy. It is essential to the efficient transportation of people and goods, both domestically and internationally. Aviation represents over 91 percent of all U.S. intercity common carrier public transportation.

As an example, a 1986 staff report concluded that the aviation industry in the New York/New Jersey metropolitan region generates almost $19 billion annually in economic activity; some 293,000 jobs; $600 million in State and city income and sales tax; and an $11.2 billion contribution to the gross regional product. That's 3.5 percent of the gross regional product.

Nationally, AOCI estimates that over 1.5 million jobs exist today because of airports and air transportation, generating almost $50 billion in payrolls alone. Based on FAA forecasts, in 10 years almost 2.5 million people will be employed because of airport activities, generating over $75 billion in annual incomes. These estimates include direct employment by airport management, airlines and airport tenants, indirect employment by airport-related businesses such as hotels and suppliers, and induced impacts caused by the turnover of direct and indirect incomes in the general economy.

An economist's rule of thumb is that for every dollar of public spending, somewhere between $8 and $9 of private sector spending is generated. In the case of aviation, spending the $6 billion surplus locked up in the Aviation Trust Fund would generate something in excess of $50 billion additional dollars in economic impact. I think that would be getting our money's worth.

The Port Authority of New York and New Jersey, in an effort to improve present service and accommodate projected passenger demand to the year 2000, has embarked upon a major capital improvement program at our three airports. Earlier this year, our board of commissioners took action to help finance the local share of an aviation capital program of $2.4 billion over the next 5 years, with additional spending needs to complete these improvements in the 1990's.

The largest component of this program is an integrated project plan to enable Kennedy International in its continuing role as the

Nation's major international gateway to accommodate 40 to 45 million passengers per year by the end of the century, up from 27 million passengers last year. Federal airport grant assistance will be essential to the successful completion of these critical projects.

A comprehensive long-range plan is essential to identify the system bottlenecks and the need for new airports. Yet the Office of Management and Budget is seeking to undercut the Federal Aviation Administration's existing planning capabilities by reducing the scope of the National Plan of Integrated Airport Systems, known as NPIAS, which is the FAA's sole long-range airport planning document. A further limitation of the NPIAS is that its 1986 version includes new airports only at those locations where local endorsement has already been accomplished, such as at Denver.

To his credit, Allan McArtor, the new FAA Administrator, has stated that "we should commit ourselves to build new airports by the turn of the century." The Administrator has also just announced the formation of a task force to develop a strategy for new airports as bold as the interstate highway system plan was in its time. Former Adminstrator Donald Engen, as one of his last acts in office, asked 10 Governors to begin airport site selection studies for the commitment of FAA funds. I note that both Governor Kean of New Jersey and Governor Cuomo of New York have responded to the FAA. A meeting with the FAA, State officials and myself is scheduled for next month. This is the type of leadership that is most needed.

Both the Senate and House bills to reauthorize the Airport and Airway Improvement Act of 1982 will increase Federal funding of airport capacity. An important House provision would require DOT and FAA to study long-term airport capacity needs through the year 2010. We feel that the report to Congress, required no later than January 1, 1990, must be finished even more quickly. A mere 23 years is not a long time coming, particularly since it takes 10 years to build a major new airport.

We strongly support a major policy shift at the Federal level from the top down to demonstrate a willingness to consider new airports. NPIAS projections have traditionally bubbled up from the local pot rather than filtering down from any national plan. A comprehensive assessment of airport systemwide needs is critical to long-range planning and development of a balanced national airport system. The FAA must be strongly encouraged to aggressively recognize and address current and future capacity shortages in the system.

Although the primary responsibility for planning and developing new airports falls on local governments, the Federal Government, principally through the FAA, has the unique ability to examine overall system deficiencies, to identify areas where new airports will have the greatest benefit and to help overcome local constraints. We are not advocating Federal subsidy, but a Federal coordinating and leadership role.

This hearing is most timely, in that yesterday the current Federal Airport and Airway Improvement Program expired while the House unanimously approved a new, much improved program, which the Senate will also soon consider. H.R. 2310 and S. 1184 would reauthorize the Airport Improvement Program and other

Aviation Trust Fund programs at substantially higher levels. Under the Airport Improvement Program, which is known as AIP, the FAA provides grants for airport development and improvement projects on which airport operators depend to finance roughly one-third of total capital costs. However, AIP funding has fallen seriously short of the levels needed and has been inadequate in providing sufficient airport infrastructure.

The airports grants program reached its highest level this year, in fiscal 1987, at $1 billion, after being underfunded in appropriations by nearly half a billion dollars cumulatively over its 5-year term. Between 1982 and 1986, the FAA turned down requests for eligible airports projects worth almost $10 billion, largely because of inadequate appropriations.

AOCI's forecast of airport capital development, which is contained in attachment A to my prepared statement, shows the need for nearly $30 billion over the next 5 years. In the draft 1986 NPIAS, yet to be released, the FAA estimates total AIP-eligible airport development needs of $24.3 billion over the 10-year period 1986 to 1995. Of that, 72 percent of total development is related to increasing airport capacity.

The pending Senate and House reauthorization bills are very responsive to these identified needs and would increase airport grants by 60 to 70 percent in fiscal year 1988. While this represents a significant increase, we should not be deluded into thinking it will solve our problem.

At present over $3.8 billion in eligible airport construction grant applications are on file with the FAA, ready but unable to be funded. Approximately $1.8 billion of that is needed just for the 30 busiest airports which have the most serious congestion problems.

We ask you, as Members of Congress, to ensure that subsequent annual airport grant appropriations under the new AIP program fully meet the authorized and needed funding levels.

The current problems of congestion, delay, and safety affecting the air transportation industry are by and large the direct result of inadequate airport and airway capacity.

To give one telling example of how the infrastructure has not kept pace, since airline deregulation in 1978, the number of passengers has increased by over 50 percent, yet it has been 14 years since the last large airport was built. By every estimation the growth of air transportation is expected to nearly double again, with today's 415 million passengers becoming 750 million by the turn of the century, which is only 12½ years away, and with only one major airport presently in the planning stage.

So where will we put those passengers? What airports will be able to handle double the number of people and many more aircraft? And while we await the inevitable, we are doing virtually nothing to prepare for it.

According to the FAA, 16 major airports were seriously congested in 1985 and that number will grow to 58 airports in 1990, affecting 76 percent of all passengers unless actions are taken immediately to increase capacity. The failure to act now will result in airports being unable to handle increasing traffic levels and passengers suffering longer and more frequent delays.

The symptoms of the capacity shortage have become very apparent. The cost of delays is approaching $5 billion a year in total increased cost of air carriers and passengers. We have a chart here reflecting this, which is also included in the prepared statement in a substantially similar form. That $5 billion delay amount would build two major airports every year. These costs are the direct result of the inability to simply move from point A to point B unimpeded without having to push the entire traveling public through the small ends of the funnel located at the airports.

DOT is relying on airline scheduling talks to reduce delays, while Congress considers imposing capacity limits on airports which will only preserve the status quo while artificially restricting service and demand and increasing airline ticket prices.

Rather than accept the status quo, we should be finding the means to expand capacity to catch up with demand. The real problem is not the number of travelers. It is that while the marketplace has room available in the aircraft, the other half of the marketplace, the airports, does not have sufficient instrument approaches, runways, taxiways, gates, terminal space, baggage areas, parking lots, and access roads to accommodate the number of passengers which the airlines deliver.

The Airport and Airway Trust Fund has an uncommitted surplus of nearly $6 billion in user fees, paid mainly by the air traveler and the 8-percent ticket tax, which by congressional mandate can only be used for airport and airway improvements. Yet it has been consistently locked up by the congressional budget process and inadequate appropriations.

This money is desperately needed to start the process of planning and building a system of airports and airways that will meet the needs of the next generation.

Mr. Chairman, you asked earlier about interim measures that might be also available. I'd like to suggest a few approaches to take advantage of the capacity we currently have while we are expanding capacity for the future.

One of the primary opportunities for short-term benefits as well as longer term benefits is research and development, which is an area in which you have been a leader on your committee, Congressman Scheuer, and we certainly thank you and salute you for that. We think more emphasis in that area can have real payoffs.

There are also many other options, including passenger head taxes to allow airports better means for adequate financing, peak-hour pricing to encourage off-peak operations, revolving loan funds to use the trust fund as seed money for new airports or expansion, and many others.

We are not necessarily endorsing those ideas, but many of them have positive aspects.

We must let the public and Congress know the extent of the continuing crisis because until that is achieved there will be no clear mandate to solve the problem. We must design and plan a system of airports and airways for the next century. A major impediment is the budgetary constraint on fully spending trust fund moneys, but the fact remains that the money exists in a fund which can be spent for no other purpose, accumulated from user taxes paid by passengers who have for years been told by Congress the money

will go to improve the system. We believe that was the congressional premise and promise.

Removing the Aviation Trust Fund from the unified Federal budget and Gramm-Rudman spending cuts will be critical if we are to devote the necessary resources to solve the problem. Otherwise, the grotesque relationship we now see between mounting trust fund surpluses and delay costs versus inadequate Federal spending for airports will continue. This is also reflected on the other chart we have here and also one of the exhibits in the prepared statement.

Mr. Chairman, we have identified the problem as one of capacity and we have the means at hand to begin to solve it. Thank you very much.

Senator SARBANES. Thank you very much, Mr. Aaronson.

[The prepared statement of Mr. Aaronson, together with attachments, follows:]

PREPARED STATEMENT OF ROBERT J. AARONSON

Good morning, Mr. Chairman and Members of the Committee. I am Robert J. Aaronson, First Vice Chairman of the Airport Operators Council International (AOCI) and Aviation Director of the Port Authority of New York and New Jersey, which operates John F. Kennedy International, Newark International and La Guardia Airports. I am very pleased to testify today on behalf of AOCI which represents the governmental bodies that own and operate the world's major air carrier airports. AOCI's 230 members operate 850 airports in the U.S. and throughout the world, and enplane more than 90% of all domestic traffic and virtually all U.S. international scheduled airline passenger and cargo traffic.

We would like to credit the Joint Economic Committee for holding these hearings and focusing attention on the critical problems facing aviation today. Our testimony will focus on the following points:

1. Our aviation infrastructure faces a monumental crisis that is growing at an accelerated rate, and will become even more serious in the not too distant future unless concerted Federal, local and

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* AOCI represents the governmental bodies that own and operate the principal airports served by the scheduled airlines in the U.S. and around the world.

* AOCI members enplane more than 90% of total domestic and virtually all U.S. international scheduled airline passenger and cargo traffic.

* Worldwide, AOCI's international member airports enplane two- thirds of all airline passengers and cargo on six continents.

industry actions are taken immediately.

2. The lack of airport capacity is now emerging as the weakest link in the national air transportation system, contributing the largest part of congestion and delay problems.

3. A federal role in effective long-range master planning is needed to increase existing system capacity and to promote and provide new airports our nation now needs.

4. The Administration and Congress must immediately commit existing resources available in the Aviation Trust Fund, be prepared to increase funding to improve and expand the airport and airway system, and establish policies once and for all to ensure that such resources are not held hostage to the Federal budget deficit.

5. Congress should provide local and state governments with the financing capabilities we need to do our share towards increasing aviation infrastructure investment.

Simply put, we face a crisis in our air transportation system today. Our concerns center not only on present aviation problems, which have been extensively covered by the media, but more importantly, our deep apprehension about the critical shortage of airport and airway infrastructure capacity for the future. While the media and Congress are focusing on the symptoms of inadequate

capacity -- flight delays, lost luggage, near misses, etc.-- the causes generally are being neglected.

The nation's aviation infrastructure is in deep trouble, not only because passenger and air carrier demand is in many cases already beyond the physical capacity of many airports, but also because there has been too little realistic effort to create the means to expand for future requirements.

ECONOMIC BENEFITS OF INVESTMENTS IN AIRPORTS

The air transportation system is a critical linchpin to our overall economy, and is essential to the efficient transportation of people and goods, both domestically and internationally. Aviation represents 91.6% of all U.S. intercity common carrier public transportation, and as such it is the foundation for a huge segment of United States commerce. As an example, a 1986 staff report concluded that the aviation industry in the New York/New Jersey metropolitan region generates:

- $18.9 billion annually in economic activity
- 293,000 jobs
- $600 million in state and city income and sales tax
- $11.2 billion contribution to the Gross Regional Product or 3.5 percent of the GRP.

Nationally, AOCI estimates that over 1.5 million jobs exist today because of airports and the aviation industry, generating almost $50 billion in payrolls alone. Based on FAA forecasts, in ten years almost 2-1/2 million people will be employed in, or as a result of, airports, generating over $75 billion in annual incomes. These estimates include direct employment by airport management, airlines and airport tenants, indirect employment by airport-related businesses such as hotels and suppliers, and induced impacts caused by the turnover of direct and indirect incomes in the general economy.

The aviation industry is obviously an important regional and national asset. The Port Authority of New York and New Jersey, in an effort to improve upon present levels of service and to accommodate projected growth in passenger demand to the year 2000, has embarked upon a major capital improvement program at Kennedy International, LaGuardia and Newark International Airports. Earlier this year, our Board of Commissioners took initial action to help finance the local share of an aviation capital program of some $2.4 billion over the next five years, with additional spending needs to complete these improvements in the 1990's. Federal user funds from the Aviation Trust Fund will be essential to the successful completion of these critical projects.

The largest component of this program is an integrated plan to enable Kennedy International to accommodate 40-45 million passengers

per year by the end of the century, up from 27.2 million passengers last year. Total project cost is now estimated at $2.7 billion, of which $900 million will be committed in the present five-year plan. A preliminary economic analysis of the project indicates it will generate some 15,000 to 17,000 man years of construction industry employment and, upon completion of the operation, maintenance and associated commercial activities could generate as many as 7,000 permanent jobs.

An economist's rule of thumb is that for every dollar of public spending, somewhere between $8 and $9 of private sector spending is generated. In the case of aviation, spending the $6 billion surplus locked up in the Trust Fund would generate something in excess of $50 billion additional dollars in economic impact. That, in my opinion, is getting our money's worth.

LONG-RANGE PLANNING

While a comprehensive long-range plan is essential to identify the system bottlenecks and the need for new airports, the Office of Management and Budget is seeking to undercut the Federal Aviation Administration's existing planning capabilities by reducing the scope of the National Plan of Integrated Airport Systems (NPIAS), the FAA's sole long-range airport planning document. A further limitation of NPIAS is that its 1986 version includes new airports only at those locations where local endorsement has already been accomplished, such as at Denver. And Denver's is the only new large commercial service

airport included in the plan. I might add that the 1986 NPIAS, which was essentially completed by FAA over a year ago, has not been published...it is stalled --still "under review"-- by the Secretary's office more than a year after Congress' mandate for publication.

To his credit, Allan McArtor, the new FAA Administrator, has stated that "we should commit ourselves to build new airports by the turn of the century", and that the FAA "will . . . seek maximum funding for our airport improvement program. Federal leadership is the first prerequisite." The Administrator has also just announced the formation of a task force to develop a strategy for new airports as bold as the Interstate Highway System Plan. Former Administrator Donald Engen warned us that by the mid-1990's, 20% of all arriving flights will suffer delays. Those numbers should trouble you. But they should also make it exceedingly clear to you that the problem is capacity. In one of his last acts in office, Mr. Engen wrote to ten governors calling on them to begin airport site selection studies with a commitment of FAA funding. I note, with satisfaction, that both Governor Kean of New Jersey and Governor Cuomo of New York have responded to the FAA; a meeting with the FAA, state officials and myself to discuss the issue is scheduled for next month.

Both the Senate and House bills to reauthorize the Airport and Airway Improvement Act of 1982 would significantly increase federal funding of airports and system capacity. An important House provision would require DOT and FAA to study long-term airport

capacity needs and develop an overall airport system plan through the year 2010. We feel that the report to Congress, required to be delivered no later than January 1, 1990, must be prepared even more quickly. A mere twenty-three years is not a long time coming, especially considering it generally takes 10 years to plan and build a new airport.

We strongly support a major policy shift at the Federal level, from the top down, to demonstrate a willingness to consider new airports. NPIAS projections have traditionally bubbled up from the local pot, rather than filtering down from any national plan. Conversely, federal guidance and planning funds can help overcome local constraints. A comprehensive assessment of airport system-wide needs is critical to effective long-range planning and development of a balanced national airport system. Either through the NPIAS or a new planning vehicle, the FAA must be strongly encouraged to aggressively recognize current and future capacity shortages in the system, and to identify those regions or metropolitan areas where new airports are needed.

Although the primary responsibility for planning and developing new airports falls on local governments, the federal government, principally through the FAA, has the unique ability to examine overall deficiencies in the system, to identify areas where new or expanded airports will have the greatest benefit to the total system, and to help overcome local constraints that often prevent or delay

local authorities in building new airports. Environmental constraints and community opposition to aircraft noise are one of the greatest impediments to airport development. The FAA must become actively involved in the promotion of both aviation and the economic benefits of new airports to local constituencies to help build public support. We are not advocating Federal subsidy, but a Federal coordinating role.

AIRPORT INFRASTRUCTURE INVESTMENT NEEDS

This hearing is timely. Yesterday, the current federal Airport and Airway Improvement Program expired while the House unanimously approved a new program, which the Senate will soon consider. H.R. 2310 and S. 1184 would reauthorize the Airport Improvement Program and other aviation trust fund programs at substantially higher levels for five or three years, respectively. Under the Airport Improvement Program (AIP), the FAA provides grants for airport development and improvement projects on which airport operators depend as "seed money" to finance roughly one-third of total capital costs. The airport grants program reached its highest level last fiscal year, 1987, at $1 billion, after being underfunded in appropriations by nearly half a billion dollars cumulatively over its 5-year term. Between 1982 and 1986, the FAA turned down requests for eligible airport projects worth almost $10 billion, largely because of inadequate appropriations. Despite the best intentions of the Congress and the Administration in 1982, AIP funding has fallen seriously short of the levels needed and has been inadequate in

providing the airport infrastructure necessary to meet current air traffic demands. We ask you, as members of Congress, to ensure that subsequent annual airport grant appropriations under the the new program fully meet the authorized and needed funding levels.

The pending Senate and House reauthorization bills would increase airport grants by 60-70% in FY 1988. While this represents a significant increase, we should not be deluded into thinking that, even if fully funded, it will solve all our problems. At present, over $3.8 billion in eligible airport construction grant applications are on file with the FAA -- ready, but unable to be funded. Of that, $2.34 billion is required for projects at primary commercial service airports and $1.46 billion is needed for general aviation and reliever airports. In addition, the FAA has or anticipates applications totalling $1.8 billion in projects just for the 30 busiest airports, which includes those with the most serious congestion problems.

AOCI's forecast of airport capital development, based on capital improvement plans of our member airports, shows the need for nearly $30 billion over the next five years (1988-1992) for safety, capacity expansion and noise mitigation projects (see Attachment A). In the draft 1986 NPIAS, the FAA estimates total AIP-eligible airport development needs of $24.3 billion over the ten-year period 1986-1995. Of that, 72 percent of total development is related to increasing airport capacity to handle growing passenger volumes and

aircraft operations. That plan calls for four new primary commercial service airports, but only one, Denver, is a large airport.

Current problems of congestion, delay, and safety affecting the air transportation industry are by and large the direct result of inadequate airport and airway capacity. But the rest of the story is that the deficiencies of our aviation infrastructure have ensued because we have failed to increase airport and airway capacity sufficiently to meet current demand, not to mention both short- and long-term traffic projections which are increasing geometrically.

SKYWAY ROBBERY: PASSENGERS ARE OVERTAXED AND UNDERSERVED BY AIRPORT CAPACITY

According to the FAA, 16 major airports were seriously congested in 1985 and that number will grow to 58 airports in the 1990's, affecting 76% of all passengers, unless actions are taken immediately to increase their capacity. FAA projections also show that aircraft operations will grow by 34 percent and passenger enplanements by 70 percent between 1986 and 1988. Airports simply will not be able to handle these increased traffic levels with current capacity, and passengers inevitably will be forced to suffer longer and more frequent delays. In 1994, the majority of all delays are expected to occur at the top 20 airports, which in turn will cause a ripple effect throughout the system.

The capacity crunch is growing even as the Aviation Trust Fund

surplus also grows. While the surplus of uncommitted user tax funds is nearing $6 billion, aviation users continue to pay into the trust fund approximately $3.5 billion per year, $1 billion of which is added directly to the surplus.

The $6 billion uncommitted trust fund surplus equates to the cost of building three new airports. The estimated $4-5 billion annual cost of delays to passengers and air carriers (see Attachment B) equates to the cost of building two new airports. We are "robbing Peter to pay Paul" by letting the trust fund be manipulated in order to make the federal deficit look smaller on paper, or by cutting aviation spending in order to meet Gramm-Rudman requirements for reducing a deficit towards which the trust fund does not contribute.

While the new Airport and Airway Improvement Program pending before Congress will substantially increase authorizations for aviation spending over current levels, the actual appropriations will not be fully realized unless the Aviation Trust Fund is removed from the unified federal budget and Gramm-Rudman sequestration.

To give one telling example of how the airport infrastructure has not kept pace: since airline deregulation began in 1978, the number of passengers travelling by air has increased by over fifty percent, yet it has been fourteen years since the last large airport was built. By every estimation the growth of air transportation is expected to nearly double again shortly, with todays 415 million

passengers becoming 750 million by the turn of the century -- only 12-1/2 years away -- while only one major airport is in the planning stage.

Where will we put those passengers? What airports will be able to handle double the number of both inbound and outbound airplanes and people. Some of the planes will get larger, some will just get fuller. And while we are waiting for that absolute certain eventuality, we have done little to prepare for it. We have historically and consistently built airports too late, waiting for the market to spur us to action after existing demand insists upon it, rather than preparing for the future.

A brief example: if you accept the proposition that National Airport is at or above its practical capacity already, and that non-expansion means a cap at approximately current levels, then a very conservative 5% unconstrained annual passenger growth means that every day of the year, starting tomorrow morning, you must tell over 2,000 people that they simply cannot leave from, or get a flight into, National Airport. Put another way, you would have to completely shut down National for over 18 days in order to stay within its current annual capacity. And, of course, that's just the first year; the numbers grow geometrically after that. Since there is obviously some rational limit to the capacity of even the largest airport, then it follows that the only alternative is additional facilities, be it runways or airports -- an expanded system.

The grotesque inverse relationship between passenger growth and federal spending for airports (see Attachment C) has exacerbated the problem. System improvements which aviation users have paid for through aviation trust fund taxes, have not been realized. Instead, funding for critical improvements has been held hostage to federal budget processes and deficit reduction efforts.

The solution to our present and future capacity problems lies in both short- and long-term approaches, and most importantly, immediate actions.

APPROACHES TO MAXIMIZING AND INCREASING AIRPORT CAPACITY

Airport Capacity Research & Development

A number of initiatives are available to help make the best use of existing airport facilities and capacity, while we expand capacity to meet future unconstrained needs. One important effort involves research and development initiatives to advance technological and procedural improvements for handling aircraft. Since 1982, an Industry Task Force on Airport Capacity Improvement and Delay Reduction, chaired by AOCI, has made recommendations for FAA research and development projects that could significantly increase the capacity of many congested airports.

The Task Force, comprised of representatives from the major

aviation industry groups, has worked closely with the FAA in this effort. Among the recommendations of the Task Force are: reducing in-trail separation between aircraft on approach; simultaneous IFR approaches to converging runways; reduced IFR dependent parallel runway approaches; reduced separation between parallel runways for IFR independent operations; and related terminal area sensor equipment, such as microwave landing systems (MLS), wake vortex avoidance and Mode S data link applications.

Some of the benefits of these concepts, if demonstrated and implemented at capacity-constrained airports, include:

For instrument (IFR) conditions:

-- a 40-100 percent capacity increase from the addition of new independent aircraft arrival streams, either by addition of new runways and taxiways, or by changes in air traffic control procedures where that is feasible;

-- a 15-20 percent increase in capacity by reducing separation standards, both longitudinal and lateral; and,

-- a 10-15 percent capacity increase from reduction only of ATC system variabilities in IFR, predominantly through automation.

For visual (VFR) conditions:

-- approximately 20 percent capacity increase through reduction of system variabilities;

-- an 18% increase in VFR departure capacity from decreasing departure separations by 10 seconds.

The capacity benefits that can be achieved are not gigantic, but together they will go a long way towards maximizing the capacities of available airports. They are certainly worth the minimal research investment needed. The Industry Task Force has requested of Congress at least $25 million each year of the FAA's Research & Development budget be devoted solely to airport capacity enhancement research (see Attachment D). Last year, the first year in which such funds were earmarked for airport R&D, Congress provided a mere $5.5 million, which has been barely enough to allow the FAA to begin this important work. The pending House DOT Appropriations bill freezes airport R&D funds at the same level for fiscal 1988. We cannot afford to continue neglecting this very important area. Airport delays are exponential. As an airport approaches capacity, average delays become longer. Conversely, investment in airport efficiency can provide a large benefit in delay reduction. We believe airport capacity R&D is a smart investment.

Other proposals on the economic front may offer some short term relief. They include such concepts as passenger facility charges (head taxes), peak hour pricing, and revolving loan funds, among others. We are not necessarily endorsing any of these, although many have some very positive aspects. The Port Authority has had first hand experience with some of these concepts. Our program of general aviation minimum flight fees and surcharges has proved to be an effective tool for managing demand and reducing delays. First introduced in 1968, the peak period general aviation surcharge is

currently $100. The legal validity of this program has been upheld by the courts which held that in view of airport congestion, the imposition of such fees was justified as a means to achieve the efficient utilization of airspace for the benefit of the greatest number of users. We are now exploring the desirability of a minimum peak hour fee for all airport users.

Given the inevitable shortage of airport capacities at a few locations, an interim balancing tool might be for congested airports to institute higher peak period charges to discourage discretionary, price sensitive travelers during peak periods and to encourage use by larger, higher valued flights. Such market pricing could take one or a combination of several basic forms, one of the most interesting of which is a peak period passenger surcharge. Market pricing would not be a panacea, and should not be seen as a viable alternative in the long run to adding new capacity where and when possible, but, to the extent funding is a major barrier to expansion, such pricing could help provide the needed revenues to support expansion. D.O.T. has started an industry feasibility study to determine if current congestion and market circumstances might make the concept of peak period pricing viable at some locations. Ironically, D.O.T. is not certain completion of the study will be funded for fiscal year 1988!

These and various other pricing and market allocation systems can provide some short term efficiencies for the system.

Longer Term Initiatives

Congress should again allow airports to collect passenger facility charges, often called head taxes, so airport income would be reasonably related to that demand variable which most accurately determines airport facility requirements: the number of passengers being handled. It is incredible, as we have said before, that airports are allowed to charge airlines on the basis of the number of seats aboard the airplane, or the number of flight attendants on board, or even the number of meals catered, but airports are prohibited from charging on the basis of the number of passengers handled which would provide revenues proportionate to demand. Serious consideration should be given to passenger charges, which could then also provide the foundation for peak period charges as mentioned above.

Establishment of a revolving loan fund within the Airport and Airway Trust Fund would provide substantial funds for major land acquisition for new airports, even to protect currently available land for future airport development. Because these funds would be repaid, the trust fund would not be permanently depleted, yet important land banking would be aided.

CONCLUSION

The aviation industry, the Administration, and Congress are all responsible for the current state of affairs because we have not educated the public or taken the necessary action to overcome the

inadequacy of existing aviation infrastructure and satisfy the need for long-overdue enhancements. Until that happens, we will continue to be plagued by inadequate infrastructure, increasing delays and mounting delay costs (see Attachment E).

DOT is relying on airline scheduling talks held recently at certain congested airports to reduce delays. Meanwhile, Congress is considering imposing capacity limits on airports which will only preserve the status quo while artificially restricting service and demand, and increasing airline ticket prices. Yet the real problem is not the number of travellers who make their decisions in a free market; it is that, while half the system has an excess of room for travelers (in the aircraft), the other half of the system (the airports) does not have sufficient instrument approaches, runways, taxiways, gates, terminal space baggage areas, parking lots and access roads to accommodate the number of passengers which the airlines deliver. To date, our response has been to curse the darkness.

Instead, we have the capacity of lighting the candle. Set the responsibility for planning and providing adequate capacity, and solve the problem by expanding the existing facilities and by building new ones to meet the increasing demand, as we did with the Interstate Highway System. The same rational approach makes sense in aviation.

Spending the Aviation Trust Fund monies, which are derived from the 8% ticket tax which each passenger pays, and from other aviation user taxes as well, is critical. The fact remains that (a) the money exists, (b) in a fund which can be spent for no other purpose, (c) accumulated from user taxes paid by passengers and shippers who have for years been told by Congress the money will go to improve the system. We believe that was the Congressional premise, and promise. These funds are desperately needed to start the process of developing a plan and financing a system of airports and airways that will meet the needs not only of the next generation, but of the already overburdened requirements of the present generation.

We can design and plan a system of airports and airways for the the 1990s and beyond. Local interests will have a significant role, and we can begin to modernize an obsolete aviation infrastructure by following the example of the interstate highway system, where Administration and Congressional leadership addressed the great public need, and executed a plan to fulfill it. A major element of the current problem is simply one of procrastination; we must get on with it! We have identified the problem as one of inadequate capacity, and we have the means at hand to begin to solve it.

Thank you.

Attachment A

AIRPORT OPERATORS COUNCIL INTERNATIONAL

FORECAST OF AIRPORT CAPITAL DEVELOPMENT & NOISE COSTS
(Billions of 1986 dollars)

	1988	1989	1990	1991	1992	TOTAL
CAPITAL & NOISE NEEDS						
CS*	4.4	4.5	4.6	4.7	4.9	23.1
Reliever	0.3	0.3	0.3	0.3	0.4	1.6
GA**	0.8	0.9	0.9	1.0	1.0	4.6
Total	5.5	5.7	5.8	6.0	6.3	29.3
CONTRIBUTIONS						
Federal	1.8(33%)	1.9(33%)	2.0(34%)	2.1(35%)	2.2(35%)	10.0(34%)
States	0.2 (4%)	0.2 (4%)	0.2 (4%)	0.2 (3%)	0.2 (3%)	1.0(3%)
Local	3.5(64%)	3.6(63%)	3.6(62%)	3.7(62%)	3.9(62%)	18.3(62%)

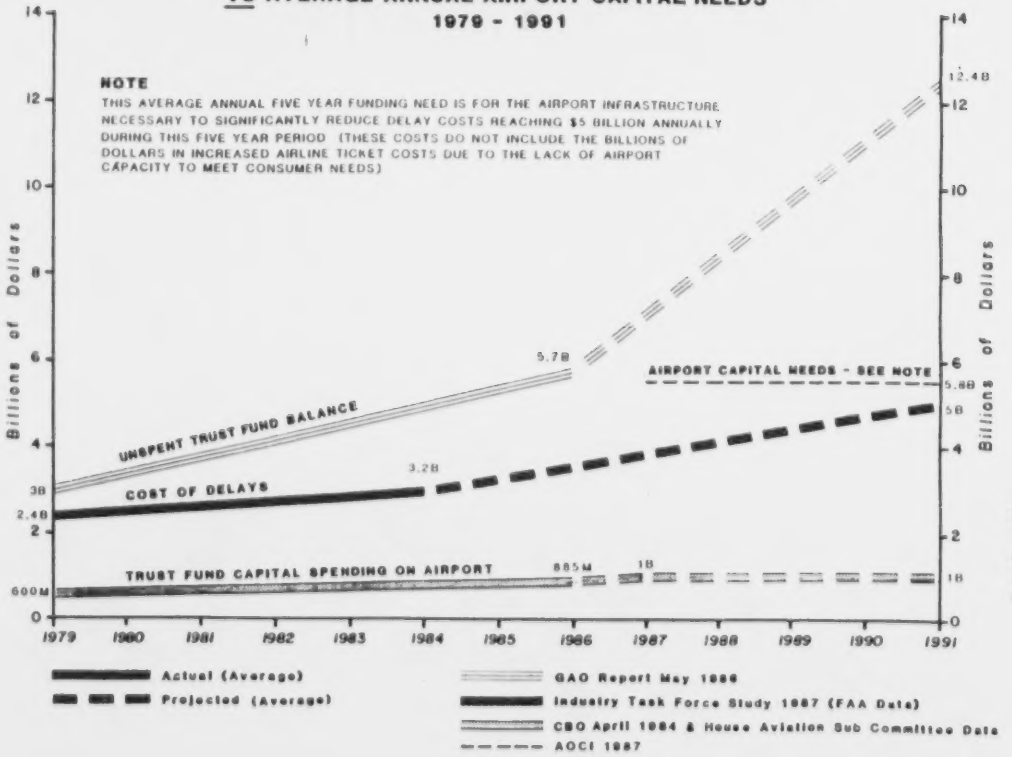
* CS = Commercial Service airports

** GA = General Aviation airports excluding relievers

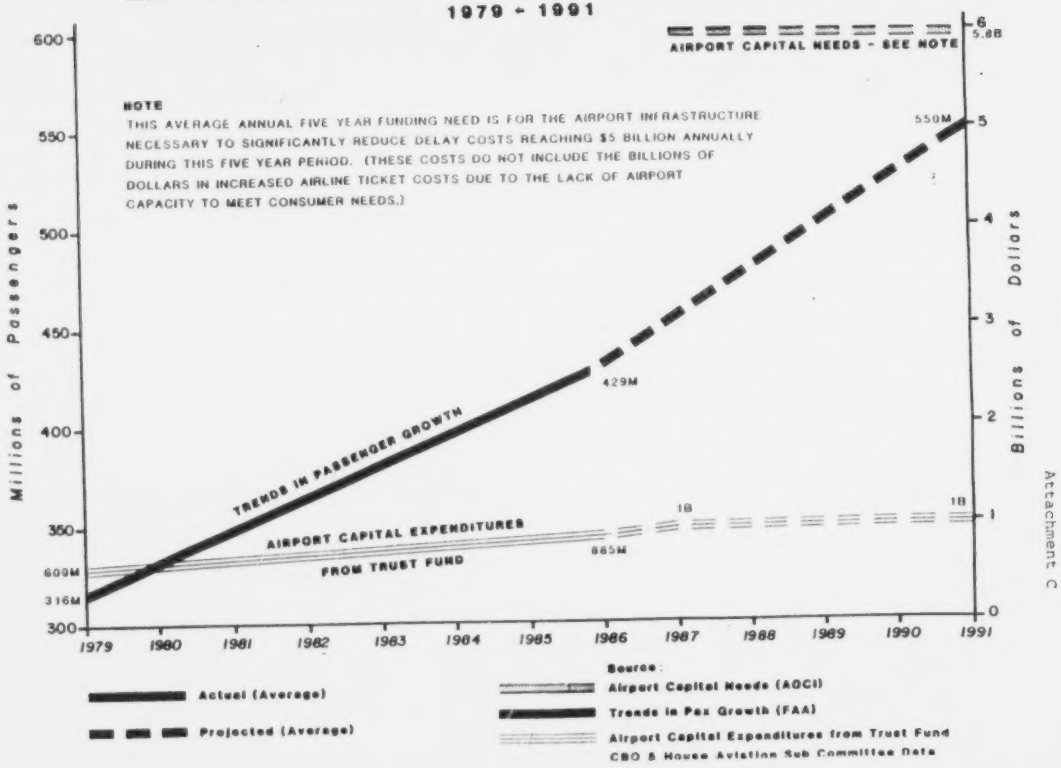
AOCI January 1987

TRENDS IN DELAY COSTS VS UNSPENT TRUST FUND BALANCE AND ACTUAL TRUST FUND CAPITAL SPENDING ON AIRPORTS VS AVERAGE ANNUAL AIRPORT CAPITAL NEEDS

1979 - 1991



TRENDS IN PASSENGER GROWTH TO AIRPORT CAPITAL EXPENDITURES FROM TRUST FUNDS AND AIRPORT CAPITAL NEEDS 1979 - 1991



Attachment C

Attachment D

AIRPORT CAPACITY RESEARCH AND DEVELOPMENT
FUNDING NEEDS - FISCAL YEAR 1988

1.	Parallel runway program	$4,500,000
2.	Converging runway program	5,000,000
3.	Mode S enhancements	2,500,000
4.	Wake vortex	1,600,000
5.	MLS siting analysis	200,000
6.	Cockpit traffic information	300,000
7.	Airspace planning (SIMMOD computer)	300,000
8.	Airport planning (Joline machine)	600,000
9.	Model development (SIMMOD modifications)	300,000
10.	Airport capacity studies	925,000
11.	Pavement design research	1,312,000
12.	Apron/Terminal design criteria	781,000
13.	Airport safety planning and support	337,000
14.	Airport visual control	713,000
15.	All-weather taxiway guidance	562,000
16.	Aircraft ground performance	1,108,000
17.	Terminal area automated control	3,500,000
18.	ATC surface automation techniques	1,100,000
19.	Aircraft performance data collection	600,000
20.	Airport capacity research data	200,000
21.	Airport building lay-out and design	500,000
22.	Runway overrun safety	500,000
23.	Fire rescue	600,000
24.	Wildlife hazards	450,000
25.	Pavement friction	475,000
26.	Heliport design and safety	400,000
27.	Snow and ice removal technology	350,000
28.	Airfield lighting and marking	1,450,000
29.	Runway configuration	1,500,000
30.	Runway safety	500,000
TOTAL		$33,163,000

Attachment E

PROJECTED INCREASES IN ANNUAL DELAY COSTS IF NOTHING IS DONE TO INCREASE AIRPORT CAPACITY

(1986 - 1996)

STATE	AIRPORT	1986 DELAY (000 HRS.) PASSENGER	1986 DELAY (000 HRS.) AIRCRAFT	1996 DELAY (000 HRS.) PASSENGER	1996 DELAY (000 HRS.) AIRCRAFT	INCREASE IN COST OF DELAYS $23/PSGR HR., ($000)	$1609/AC HR., ($000)	TOTAL ($000)
MD	BWI	1147	11.80	1898	16.93	$17,273	$ 8,254	$ 25,527
MI	DTW	2578	27.23	6188	57.66	83,030	48,962	131,992
NJ	EWR	5652	59.97	7241	67.11	36,547	11,488	48,035
NY	JFK	3180	33.00	4847	43.77	40,641	17,329	57,970
	LGA	4106	43.33	5081	46.99	22,563	5,889	28,452
TN	MEM	1746	18.28	2994	26.95	28,704	13,950	42,654
	BNA	1093	11.30	2576	23.47	34,109	19,582	53,691
FL	MCO	1252	13.36	4609	43.55	77,211	48,576	125,787
	MIA	2911	30.96	4430	41.53	34,937	17,007	51,944
	TPA	997	10.45	2157	19.33	26,680	14,288	40,968
	JAX	403	4.16	579	5.12	4,048	1,545	5,593
	PBI	457	4.71	803	6.99	7,958	3,669	11,627
LA	MSY	508	5.26	947	8.51	10,097	5,229	15,326
OR	PDX	835	8.79	1108	10.14	6,279	2,172	8,451
CT	BDL	586	6.02	1371	11.93	18,055	9,509	27,564
WI	MKE	583	6.02	1214	10.95	14,513	7,932	22,435
UT	SLC	1412	14.74	3376	30.26	45,172	24,972	70,144
PA	PIT	1914	20.07	2692	24.49	17,894	7,916	25,810
	PHL	1854	18.72	4764	41.69	66,930	36,959	103,889
NM	ABQ	714	7.24	1452	12.41	16,974	8,319	25,293

Senator SARBANES. Mr. Mathison, please proceed.

STATEMENT OF THEODORE E. MATHISON, STATE AVIATION ADMINISTRATOR, MARYLAND DEPARTMENT OF TRANSPORTATION

Mr. MATHISON. Good morning, Mr. Chairman and Congressman. It's a pleasure to be with you today to testify on developing the national air transportation system as we need it to continue the economic growth of the United States.

My role as administrator of Maryland aviation is twofold. One is to oversee the State-owned airports and, second, the promotion of general aviation activities throughout the State.

It is interesting that the Maryland General Assembly charges me also to cooperate with, and assist, the Federal Government in the development of aeronautics. So participation in the hearing this morning is most timely.

My comments will be related to the continuing need for Federal funding of the air transportation system and ways to improve our planning process. With the many barbs that have been thrown at the FAA today, I would like to say that we have a sound partnership with the Federal Aviation Administration. This Federal partnership extends to all of Maryland's 40 public use airports, including the two State-owned airports, Baltimore-Washington International and Martin State Airports.

BWI is a major commercial airport located some 40 miles northeast of Washington, DC. Martin State Airport is a rapidly growing, general aviation facility situated in the northeastern suburbs of Baltimore County. It serves as home for the Maryland wing of the Air National Guard, the aviation division of the Maryland State Police, and the business jets of many of Maryland's largest corporations. Aside from BWI and Martin, we have five airports in the State which support scheduled air service and a large general aviation industry.

The Joint Economic Committee's interest in the creation of a national system of air transport infrastructure is welcome and understandable, recognizing the committee's mandate to guide other Members of Congress on the key economic issues facing the Nation. While Congress and the country wrestle with countless, seemingly unsolvable economic problems, we will all suffer, in my judgment, if development of a national air transport system does not continue to move forward. From the vantage point of BWI, commercial air carrier airports are "big business" and as public facilities should rightfully be considered "public business."

To illustrate this point, in early 1985, the BWI Development Council, a group of public and private interests dedicated to advancing BWI, both as an employment center and air transportation hub, commissioned an economic impact study of the airport. This report found that BWI generated a total economic impact of $1.3 billion in the form of business sales, goods and services purchased, and wages and taxes paid. If the 19,000 jobs provided by commercial enterprise related to BWI were placed under one roof, they would constitute a work force greater than that of any private sector employer in Maryland, generating over $330 million in

wages annually. Simply stated, when you are in the "public airport business" you find yourself in "economic development business" as well. BWI takes both roles very seriously, and I believe the Maryland economy is stronger as a consequence.

In financially assisting airport operators to undertake master planning activities, acquire land, the use of which is incompatible with airport operations, and constructing capital development projects which increase airfield capacity consistent with an approved airport master plan, Congress both materially assists the flow of interstate and foreign commerce, while concurrently promoting the vitality of our national economy.

Given the high economic stakes involved in airports, such as BWI, the the crucial role they play in the public's need for a reliable air transportation system, we dare not leave their development to chance. It was for precisely this reason that the Federal Government embarked in 1926, under the Air Commerce Act, upon a series of longstanding programs supporting airport development. These programs have allowed for the evolution of an integrated and effective national air transportation system.

The most recent of these programs is the Airport and Airway Improvement Act of 1982 creating the Airport Improvement Program, or AIP. The AIP has formed the backbone of a modern airport system providing funds for a wide range of projects. These include runway and taxiway improvements, land acquisition, navigation aids and a variety of related items. The AIP has also funded noise abatement projects.

Reauthorization of the AIP, or its successor program now being considered by the Congress, is even more essential than before. Faced with growing capacity problems, BWI, as well as many other airports, must invest heavily in major improvements such as new runways, runway expansions, and so forth. A new runway can easily cost $50 million, which does not even start to address the question of land acquisition and noise abatement. Few public agencies can afford this on their own. Closely related to the growing capacity problem is the nationwide problem of aircraft noise at airports. The noise problem has no simple solution, and it will be very costly to overcome. Many times, decisions as to where to build a runway or even an airport must be made in the face of public opposition to the potential of adverse environmental and noise impacts.

At BWI, we are looking conservatively at over $48 million to address the noise problem, and will be heavily dependent upon Federal funding to implement planned abatement programs. Without such programs, further capacity improvements will be difficult at best. Furthermore, we owe relief to those citizens who must bear the brunt of aircraft noise associated with an expanding air transportation system.

Hub facilities, such as BWI, are not the only airports in need of Federal support. In Maryland we have a number of airports—Cumberland and Salisbury to mention a few—which provide needed air transportation facilities to their local communities. Such airports support scheduled air service and strong general aviation activity. These airports are components of both the national and a statewide transportation system. Capital improvements are needed at many of these airports, and it is unrealistic to expect the local jurisdic-

tions alone to carry the load. In Maryland, the State aviation administration and the local jurisdictions share the burden of matching the Federal Government's share in authorized improvements to these airports. We also provide under our own funding, along with local participation, funds for terminal improvements not funded by the Federal Government. I can state without question that many of these airports in Maryland would be in serious difficulty were it not for the AIP and the Aviation Trust Fund dollars which support it.

As a final note relative to Federal support of airports, the AIP is in effect the last chance for many airports. As was recently reported in the Washington Post, the number of small airports in the Baltimore-Washington region is rapidly dwindling. This forces general aviation aircraft either to use the area's busy air carrier facilities, or use airports which are considerable distances from Baltimore, Washington, or their suburbs. Neither situation is desirable. However, the AIP offers local jurisdictions the opportunity to purchase and improve some of the smaller airports from the private operators who can no longer afford needed improvements. It is not possible to save all threatened airports in this manner, but hopefully some can be preserved. During the past year in Maryland alone, we lost two public use airports with at least three others threatened with closure.

Turning now to the question of long-range needs, we must do a better job of identifying what airport facilities we will need 10, 15, and 20 years into the future. To accomplish this, we need improved ways of forecasting air travel demand. Once we have achieved this, we will be able to determine the type and number of aircraft that will be used to meet this demand, and more importantly, what the impact will be on our air traffic control system. Our current capabilities in this area are cumbersome and piecemeal, at best. Only by improving this process can we determine where and when to commit our scarce funding resources to ensure an efficient air transportation system. We must not only be able to respond to new demands before we are faced with a crisis, but ensure, as well, that we don't overcommit in the wrong area.

This planning process should be a joint effort. It should combine the best talents of the Federal Government, the airlines, the airport industry and private research organizations. I believe that the payback of such an effort would be far reaching.

In summary, we have much to accomplish in ensuring that our air transportation system remains capable, efficient, and safe. From the airport operator's standpoint, this means having the ability to know reasonably well in advance what facilities are needed and when. Second, it means being assured that a funding mechanism will be there when it is needed to construct new facilities, be they a new runway, terminal facilities or even a new airport. We have with the Airport Improvement Program a system for providing the necessary financial resources, and we should use it, not let it sit idle. While the current program has some shortcomings, it has provided the means for the evolution of a truly national air transportation system. However, much remains to be done and I hope that Congress and the air transport industry will continue to support the AIP or a similar successor program.

With the continued interest and support of the Congress, I know that the State of Maryland is fully prepared to play its part in developing a national system of air transport that will remain the envy of the world.

In short, Mr. Chairman, we need to get on with the problem at hand. Thank you.

Senator SARBANES. Thank you very much, Mr. Mathison, for a very helpful statement.

[The prepared statement of Mr. Mathison follows:]

PREPARED STATEMENT OF THEODORE E. MATHISON

Good morning, Mr. Chairman, and members of the Joint Committee. I am pleased to be here with you today to testify on the Federal role in developing our national air transportation system to accomodate long-term economic growth in the United States. Among other general powers and duties, the Maryland General Assembly charges me, as State Aviation Administrator, with the responsibility to "cooperate with and assist the federal government in the development of aeronautics."

We in Maryland enjoy, I believe, a sound partnership with Federal Aviation Administration (FAA) officials. This Federal-State partnership extends to all 40 of Maryland's public use airports, including our two State-owned and operated facilities, Baltimore/Washington International Airport (BWI) and Martin State Airport.

BWI, a major commercial air carrier airport, is located some 40 minutes north of Washington, D.C. in Anne Arundel County,

Maryland. Martin State Airport, a rapidly growing general aviation facility situated in the northeastern suburbs of Baltimore County, serves as home for the Maryland wing of the Air National Guard, the aviation division of the Maryland State Police, and for the business jets of some of Maryland's largest corporations. Aside from BWI and Martin, we have five airports in the State which support scheduled air service and a large general aviation industry.

Airports and Economic Development

The Joint Economic Committee's interest in the creation of a national system of air transport infrastructure is welcomed and understandable, recognizing the Committee's mandate to guide other Members of Congress on the key economic issues facing the Nation. While Congress and the country wrestle with countless, seemingly intractable, economic problems -- we will all suffer, in my judgment, if development of a national air transport system does not continue to move forward. From the vantage point of BWI, commercial air carrier airports are "big business" and as public facilities, should rightfully be considered "public business."

In early 1985, the BWI Development Council, a group of public and private interests dedicated to advancing BWI, both as an employment center and air transportation hub, commissioned an

economic impact study of the Airport. This report found that BWI generated a total economic impact of $1.3 billion in the form of business sales, goods and services purchased, and wages and taxes paid. If the 19,000 jobs provided by commercial enterprise related to BWI were placed under one roof, they would constitute a workforce greater than that of any private-sector employer in Maryland, generating over $330 million in wages annually. Simply stated, when you are in the "public airport business" you find yourself in "economic development business" as well. BWI takes both roles very seriously, and I believe the Maryland economy is stronger as a consequence.

Federal Role in Fostering Air Commerce

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Given the high economic stakes involved in airports such as BWI and the crucial role they play in the public's need for a reliable air transportation system, we dare not leave their development to chance. It was for precisely this reason that the Federal government embarked in 1926, under the Air Commerce Act,

upon a series of longstanding programs supporting airport development. These programs have allowed for the evolution of an integrated and effective national air transportation system.

The most recent of these programs is the Airport and Airway Improvement Act of 1982 creating the Airport Improvement Program, or AIP. The AIP has formed the backbone of a modern airport system providing funds for a wide range of projects. These include runway and taxiway improvements, land acquisition, navigation aids and a variety of related items. The AIP has also funded noise abatement projects.

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address the noise problem, and will be heavily dependent upon Federal funding to implement planned abatement programs. Without such programs, further capacity improvements will be difficult at best. Furthermore, we owe relief to those citizens who must bear the brunt of aircraft noise associated with an expanding air transportation system.

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recently reported in the Washington Post,[1] the number of small airports in the Baltimore/Washington region are rapidly dwindling. This forces general aviation aircraft either to use the area's busy air carrier facilities or use airports which are considerable distances from Baltimore, Washington or their suburbs. Neither situation is desirable. However, the AIP offers local jurisdictions the opportunity to purchase and improve some of the smaller airports from the private operators who can no longer afford needed improvements. It is not possible to save all threatened airports in this manner, but hopefully some can be preserved. During the past year in Maryland alone, we lost two public use airports with at least three others threatened with closure.

Turning now to the question of long-range needs, we must do a better job of identifying what airport facilities we will need 10, 15, and 20 years into the future. To accomplish this, we need improved ways of forecasting air travel demand. Once we have achieved this, we will be able to better determine the type and number of aircraft that will be used to meet this demand, and more importantly, what the impact will be on our air traffic control system. Our current capabilities in this area are cumbersome and piecemeal. Only by improving this process can we determine where and when to commit our scarce funding resources to ensure an efficient air transportation system. We must not

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1. Day, Kathleen. "Small Airports Nosediving in Number," Washington Post, September 21, 1987, Business Section, page 1.

only be able to respond to new demands before we are faced with a crisis, but ensure, as well, that we don't over commit in the wrong area.

This planning process should be a joint effort. It should combine the best talents of the Federal government, the airlines, the airport industry and private research organizations. I believe that the payback of such an effort would be far-reaching.

Conclusion

In summary, we have much to accomplish in ensuring that our air transportation system remains capable, efficient and safe. From the airport operator's standpoint, this means having the ability to know reasonably well in advance what facilities are needed and when. Secondly, it means being assured that a funding mechanism will be there when it is needed to construct new facilities, be they a new runway, terminal facilities or even a new airport. We have with the Airport Improvement Program a system for providing the necessary financial resources, and we should use it, not let it sit idle. While the current program has some shortcomings, it has provided the means for the evolution of a truly national air transportation system. However, much remains to be done and I hope that Congress and the air transport industry will continue to support the AIP or a similar successor program.

With the continued interest and support of the Congress, I know that the State of Maryland is fully prepared to play its part in developing a national system of air transport that will remain the envy of the world.

Thank you Mr. Chairman and members of the Committee.

Senator SARBANES. Mr. Dickerson, please proceed.

STATEMENT OF J. SPENCER DICKERSON, VICE PRESIDENT, AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES

Mr. DICKERSON. Thank you, Mr. Chairman.

I am Spencer Dickerson, a vice president with the American Association of Airport Executives. AAAE is the largest professional organization for airport executives in the United States, representing over 1,400 managers at all sizes of airports nationwide.

We appreciate the opportunity to appear at today's hearing on investment in the Nation's airports and airways. As you have heard earlier today, the United States has the world's most extensive airport system. Because the system is essential to national transportation, Federal, State, and local governments have all made major investments in order to ensure the public that the system is the safest in the world.

Since most public airports are owned and operated by units of local government, airports must compete for funds with other government activities. Therefore, they are scrutinized during budget preparation and may be the subject of public debate, particularly if major improvements or new construction are anticipated. They may even be the target of proposed restrictions aimed at limiting airport access and aircraft noise levels. In such instances, the future of an airport is determined primarily through the local political process.

When most people look at airports, they rarely think of aviation as a springboard for economic growth in their communities. In reality, airports create jobs, stimulate economic growth, bring in new business, attract tourists and conventions, and generate substantial tax revenues. Modern airports, large and small, are much more than aircraft, passengers, and freight on the move. They are centers for economic activity and the primary source of jobs for thousands of employees.

Airports like JFK, La Guardia, Newark, and BWI generate billions of dollars to the local economies, as you've heard today, while creating thousands of jobs. Smaller airports, like Salisbury, Hagerstown, and Central Wisconsin have smaller impacts, but when compared to the total economy in their region, it is clear that those facilities, too, have a major impact on commerce.

Citizens may complain about aircraft noise. However, little do they realize that their very livelihood is dependent upon activities coming from that same airport. Aviation and community leaders must illustrate to the public the beneficial aspects of aviation in such a way that the findings will be significant to everyone, whether the public uses the airport or not.

In addition, aviation is an essential part of business transportation, and has helped shape the size and structure of many major corporations. The presence of an airport and the type of services it provides are important considerations in the location of business and industry facilities.

General aviation airports play a critical role in our national air transportation system by serving to relieve congestion at major airports while providing important aviation services to thousands of

pilots and passengers who do not live in metropolitan areas. Without these facilities, aviation and the traveling public would suffer significantly.

Simply stated, the entire nation benefits from reliever and general aviation airports. Almost 90 percent of the U.S. population is within 20 miles of one of the general aviation or reliever airports that are part of the FAA's national plan of integrated airport system.

Reliever airports play a key role in today's aviation system by reducing congestion and delays in busy commercial service airports. Furthermore, general aviation facilities provide quick and convenient transportation to the thousands of communities that do not have scheduled commercial air service. In fact, the FAA estimates that a small general aviation airport with 20 based aircraft will lower the travel costs in the surrounding area by almost $200,000 annually, because their travel is fast and inexpensive.

That small airport may also account for five jobs and an annual payroll of more than $100,000 in a typical situation. Due to the critical role they play, general aviation airports have unique funding and development needs. The FAA estimates that over the next 10 years, general aviation airports in this country will need $4.4 billion for capital improvements eligible for Federal aid, while reliever airports will need almost $2 billion.

General aviation projects that are part of the $6.4 billion package include new runways and taxiways to handle increased traffic, navigation aids to improve the efficiency and safety of the facilities, crash and rescue vehicles and snow removal equipment, and programs to minimize the impact of aircraft noise on the general public.

Local governments own most public-use airports, but they are hard pressed to pay operation and maintenance costs, especially at general aviation and reliever facilities. As a result, the airport's income is usually not high enough to support the use of revenue bonds for debt financing. As a result, general aviation and reliever airports depend greatly upon aid from the Federal Government to cover a large part of the cost for capital improvements.

The FAA estimates that about 70 percent of reliever and 80 percent of general aviation capital costs are paid with funds from the Federal Government's airport improvement program.

The airport funding program is funded entirely by dedicated user fees. As you heard earlier, presently almost $6 billion sits uncommitted in this trust fund. This money should be spent for the purpose for which it was intended—to improve and enhance aviation safety and expand the airport and airway system.

All of us in the aviation industry were extremely disappointed that Congress failed to pass the airport and airway reauthorization program before the 1982 bill expired yesterday. We call on you and your colleagues to act swiftly so that major improvements can be made to our national air transportation system.

Without these funds, the delay and safety concerns of this past summer will be miniscule compared to the problems the American traveling public will encounter next year.

Despite the current reauthorization problem, the future for general aviation airport funding from the Federal Government looks

bright. Many in the industry and on Capitol Hill believe that as the major hub airports become more and more congested with increased airline service, there will be a greater need for upgraded general aviation and reliever airports to handle the overflow traffic.

If passed, both the Senate and House airport improvement program bills will address any of the funding needs for the general aviation airports for the next 5 years.

These next 5 years will be a critical time for the aviation industry. How the Congress and industry address the needs of today will affect aviation and the entire U.S. economic system well into the next decade.

Again, I thank you for the chance to appear before this committee and will be glad to answer any questions you may have.

Representative SCHEUER [presiding]. Well, this was an unusually interesting panel and I thank you all. I congratulate you all for your testimony. I'm going to sort of keep the pot boiling for a few minutes until Senator Sarbanes returns.

Mr. Mathison, I'm going to ask you a question about the noise abatement problem and I'm going to do that only in part because for many years I represented Kennedy Airport and that means the people perched in all those communities around it, and I now represent La Guardia Airport. So the question of noise abatement has been drummed into me by my constituency for a long time and the importance of noise abatement.

You mention in your testimony that you are looking conservatively at over $48 million to address the noise problem and to fund your planned abatement program.

Can you tell me what is your approach in noise abatement, apart from the whisper jets that are coming onstream I suppose predictably over the next decade. What are the things that you can do at your airport to reduce noise for the surrounding communities and what lessons does that have for other airports and other communities?

Mr. MATHISON. There are two aspects to our program, Congressman. The first I would say is structual and is aimed at addressing the question of people that are now subjected to and providing relief to them.

Representative SCHEUER. I'm having trouble hearing.

Mr. MATHISON. There are two aspects to our program. One I would call the structural element and the other is abatement. Let me take the first program to start with.

It has several aspects to it. One is the acquisition of property in the areas affected by the highest level of noise, and that is the LDN-75 which I'm sure you've heard of many times. We are actively purchasing properties, residential properties, in that area. We relocate the individuals under the Federal relocation program and then remove the structure. We're looking now at uses for that property, perhaps reforestation or similar uses because there are very few allowable uses under State law and the Federal system, which are almost identical. Cemeteries and agricultural use are about the only uses.

We are expanding, or will be expanding, that program to include areas within the LDN-70 noise contour starting July 1, 1988.

We are also looking at what we call a Home Owners' Assistance Program and that has two elements. One is the soundproofing of homes. That is not a new approach, but we are conducting a pilot program where we will pay up to $20,000 per residence to soundproof a home. We examine the home before, take noise readings in it, then conduct the soundproofing and then take noise readings afterwards to see what soundproofing results are obtained.

Representative SCHEUER. Is that a capital grant or is that a loan, a mortgage loan of some kind?

Mr. MATHISON. The current program is a pilot program. We are doing it with State dollars under our consolidated transportation trust fund.

Representative SCHEUER. I understand that. But do the dollars go to the homeowner for purposes of soundproofing in the form of a loan or is it a grant, a gift?

Mr. MATHISON. We will hire a contractor, or we will select a list of contactors that the homeowner can contract with, and then we will pay the bill directly to the contractor. It's not an outright grant to the homeowner.

Representative SCHEUER. It is a grant to the homeowner if you're paying the bill for the work and you don't require repayment.

Mr. MATHISON. Indirectly it is, but it is not transferred per se to the homeowner.

Representative SCHEUER. I understand that. You're paying the contractor directly to do the work, but in terms of the enhancement to the value of the home—and there surely is that—then that would be a gift or a grant. I have no problem with that. I think that's a very wise program.

Mr. MATHISON. In conjunction with that, we then require that an aviation agreement—that is an air easement—to hold the State harmless from noise be entered into the deed for that piece of property. If house or home changes hands, the new owner then is put on record that there is an aviation agreement protecting the State from noise suits.

The second aspect of the homeowner assistance program is what we call a resale assurance program. There is concern that houses within the noise zone are lower in value than those on the outside. If, for example, there is a house on the outside identical to one in the noise zone that would sell for $100,000, the one in the noise zone might sell for $90,000 and the State would make up the difference, paying the homeowner the $10,000 difference. This allows the homeowner to move without losing value equity in his or her home. We do not buy that home. There has to be a sale between the owner and another private individual.

Representative SCHEUER. Now wait a minute. How does it serve the public interest for the State to lay out $10,000 and substitute one homeowner for another homeowner?

Mr. MATHISON. Again, when an individual goes into the program they must enter in the deed an aviation agreement that holds us harmless from noise to protect us from suit downstream as the home changes hands. So once you go into that program, a home must have the deed aviation agreement attached to it which should protect us from further suit.

Representative SCHEUER. From the new homeowner?

Mr. MATHISON. That's correct.

Representative SCHEUER. Or any successor homeowner?

Mr. MATHISON. That's correct. Currently, we have about $38 million in suits pending against us on noise.

The other aspect of the program we have within Maryland, we have had since 1976, is a very aggressive noise program which led to the development of the noise zone around the airport. We are currently updating the noise zone air abatement plan, and we are looking at all types of operational procedures. That is, preferential runway use, abatement climbs and so forth. The update should be completed next spring.

Representative SCHEUER. What contribution to the total noise abatement program do you suspect will come from the oncoming generation of whisper jets that will be quieter and make an airport a better neighborhood? Let's say over the next decade.

Mr. MATHISON. We are hopeful that they will contribute significantly. Currently BWI has about 20 percent stage 3 aircraft operations. I would guess, conservatively, it will be somewhere between 1992 and 1995 that we really see an impact when we pass the 50 percent point in terms of quiet aircraft.

Representative SCHEUER. From the advent of the whisper jets, the new generation?

Mr. MATHISON. That's correct.

Representative SCHEUER. Thank you very much. Thank you, Mr. Chairman.

Senator SARBANES [presiding]. Gentlemen, I have a rather far-out thought. Are the military airports located in such a way that if they became available for civilian use, they could make a significant difference in addressing the problem of inadequate infrastructure?

Mr. AARONSON. Mr. Chairman, on an overall nationwide basis, I believe the answer would be "yes." Obviously, it would vary from one metropolitan area to another. But the additional resources that could potentially be put into the system by increased joint use would be very, very substantial indeed. And that's been something that the FAA has been seeking for many, many years. It's a very complex government issue, I don't have to tell you.

Senator SARBANES. But I gather in many instances they are located sufficiently advantageously—that it would make a difference?

Mr. AARONSON. Yes.

Senator SARBANES. How about in the New York area?

Mr. AARONSON. In the New York area, probably less so than in certain other ones. For example, it's my perception that in southern California, which has a major capacity shortfall, that there are military facilities that could make a major contribution by virtue of just where they are located and where the population is. In the Metropolitan New York area, probably our first priority for additional airline activity will end up being Stewart International Airport which is a former Air Force base which was turned over to the State of New York, and that's available when we need it. Then after that, we get into others where joint use might be a possible help such as McGuire Air Force Base.

But I would distinguish New York from some of the other metropolitan areas where I think there are more immediate benefits.

Senator SARBANES. Well, thank you all very much.

Representative SCHEUER. Could I ask one more question?

Senator SARBANES. Sure.

Representative SCHEUER [presiding]. Stewart Air Force Base, is that up in Poughkeepsie?

Mr. AARONSON. Stewart is in Newburg, Congressman Scheuer, on the other side of the river.

Representative SCHEUER. And you're sort of putting that in a holding pattern against the day when you will make a major metropolitan airport out of it?

Mr. AARONSON. Well, the State of New York has put it in a holding pattern. It's a facility of the State of New York.

Representative SCHEUER. Wouldn't the port authority acquire the land and build and operate the new airport?

Mr. AARONSON. As opposed to using Stewart?

Representative SCHEUER. No. When Stewart Airport is expanded, as it must be, and probably spend God knows how much on it, will that work be done and will that new airport be owned by the Port Authority of New York and New Jersey?

Mr. AARONSON. I can only answer that by saying it would be a judgment that the two States would have to make because it presently is outside the geographic jurisdiction of the port authority. We are participating as an important player in the planning process. I mentioned the meeting that we will be having with the FAA Regional Administrator and the two State department of transportation in the near future.

If it were the judgment of the States that one of the port authorities become the developer and operator, they would have to change the legislation. They could do that.

Representative SCHEUER. Who is presently planned to be the developer and operator?

Mr. AARONSON. I think it's fair to say there is no specific plan. New York State is trying to develop it as an air carrier airport, but they are a little bit ahead of the demand.

Representative SCHEUER. Is there any plan at least to put on notice people who from this day on will buy homes in that area that that airport is going to be expanded and they should buy their home with knowledge that it's going to be expanded to limit the liability of whoever owns that airport to those new homeowners for the problems of noise?

Mr. AARONSON. I honestly don't know the answer. I would be very happy to get back with you with some information on it. But related to it is that the State of New York made a major land purchase adjacent to the former Air Force base when they took it over for the purpose of protecting the airport's future.

Representative SCHEUER. Very good. That's the kind of thing I'm talking about.

Let me ask you one more question in this whole area of noise abatement. What does your authority plan as specific noise abatement programs and projects for La Guardia and Kennedy Airports specifically? I had a very unsuccessful experience with the chairman prior to this in trying to get them to adopt a comprehensive,

well thought through noise abatement program. It was a very frustrating experience.

I am very impressed with the new leadership of the port authority. They are really outstanding, both the chairman and the executive director are outstanding capable people.

What have they got on the drawing boards for major noise abatement projects for New York and New Jersey, for Kennedy and La Guardia?

Mr. AARONSON. Congressman, I think we've made great strides in that area in the last 5 or 6 years, perhaps since the time you were engaged in that dialogue.

Representative SCHEUER. It wasn't really a dialogue. It was a monologue because I never got anything coming back.

Mr. AARONSON. I hear you. I'd like to just agree with Ted Mathison's comment that the greatest single contribution to giving airport neighborhoods relief from noise has to be from improved technology airplanes because there's a real limit to what you can accomplish on the ground. But putting that aside——

Representative SCHEUER. Don't put it aside yet. I want to ask you the same question that I asked him. Looking forward a decade down the pike, what percentage of the total noise abatement problem will be met by the new generation of whisper jets of all sizes, shapes and varieties, and what is the residual noise problem that you are going to have to cope with yourself in the management and design of the airport?

Mr. AARONSON. I think to be technically correct, there's probably no good answer to your question in terms of an actual percentage. Personally, just in terms of general impressions, I think perhaps three-quarters of what has to be accomplished will come and has to come from the aircraft itself, and that leaves us with the things that we can do in the vicinity of the airport to give the neighbors relief.

We have a very large program at this point which has been terrifically successful to soundproof schools near the airport; $30 million has been committed to soundproofing schools in the last 4 years, and the program is continuing as fast as it can be delivered.

Another one at La Guardia which was just acted on in the last 6 months is something that's quite unique. I think there may be two or three other airports in the country—probably in the world—which have gone to the lengths we decided were needed at La Guardia, after consulting with the community, to construct a noise barrier on the western edge of the airport. This barrier is going to cost about $8 million. It's a half a mile long and 20 feet high and it will literally cut the sound levels that the neighbors immediately near the airport hear by half. That project is funded and will be finished within the next year.

Representative SCHEUER. That's remarkable. Well, let me just ask one more question before we adjourn. We have had estimates of between $25 and $30 billion as roughly the amount that we ought to be spending in capital investments in our airport system in this country over the next 10 years, I suppose.

What investments could we make in making do with what we have as compared to what—which I would think would be rather less expensive and rather more cost effective than building new

airports. I think 16 of them have been recommended immediately. I have no doubt that we are going to have to get on with building those new airports, but even apart from the funding, it's a very difficult political problem involving Federal, State, county, and local governments, an aroused citizenry and so forth. And it will be time consuming to build the new airports that are needed.

What percentage of the problem of overcrowding and delays and long waits on the tarmac and long waits in the holding pattern—what percentage of that problem can be addressed by making do better with what we have, by expanding runways, adding runways to existing airports, perhaps—I'm impressed by the $25 million research fund addressed to using more effectively and more intensively the facilities that are there. As a rough rule of thumb—and it's very difficult to state this accurately—but as a rough rule of thumb, what portion of the problem can we address rather cost effectively and rather quickly by improving what we have as against building totally new airports, any of you?

Mr. DICKERSON. Congressman, from AAAE's perspective, one of the immediate issues that could be addressed is better utilization of the smaller hubs or medium hubs in this country. I think a lot of credit go to airports like BWI and Charlotte, NC, and Dayton and Dulles and Raleigh-Durham and Nashville, which were able in concert with the airlines and the FAA to develop underutilized facilities in the major hubs instead of jamming more traffic into Chicago O'Hare, more traffic into Atlanta or Dallas or Denver. Certainly there are a lot of airports in this country in all regions that are able to handle increased traffic and are able to do so immediately. I think we need to encourage that partnership between local governments, the FAA, and the airlines to better utilize those facilities. That's one immediate answer.

Representative SCHEUER. And are most of these airports that are underutilized a considerable distance away from a metropolitan center? Is that the reason they are underutilized?

Mr. DICKERSON. Well, they are underutilized because the airline hub and spoke system is the key to their operations. It makes more sense to American and United to take all their flights and put them into Chicago O'Hare to maximize their equipment, maximize their resources.

What we are suggesting is that that overflow traffic, increased hub operations, could be better utilized maybe at Milwaukee instead of Chicago or other medium sized airports.

Representative SCHEUER. Would some improved means of ground transport of passengers from the central business district to the airport, perhaps a monorail, but various kinds of new rapid rail transit—would that make it more acceptable from the market point of view for commercial airlines to use an airport further away from a large metropolitan center?

Mr. DICKERSON. Well, certainly that would help. In many cities across the country the airport operators have taken leadership in working with the local politicians in developing those types of mass transit systems, high-speed rails, subways, that expedite passengers' use of those facilities. That can be encouraged more and more.

Representative SCHEUER. Do any of you have a genius idea on something that we could do in the short run to ameliorate the emerging safety problem and the concern that we have of a vast, horrifying accident waiting to happen out there that we can't help being concerned about when we read the tea leaves of the extraordinary increase in near misses?

Mr. AARONSON. I'll take a try, Congressman. I really don't believe there's any magic solution, but going back to the testimony of your earlier witnesses, I think one of the most important things would be to put in place more continuity of leadership in the FAA. The FAA has a lot of resources and it has its hands obviously on a lot of the elements of the industry which are critical to continue delivering the product safely. I think we would all get a benefit, both in addressing the safety and capacity, with some of the suggestions you heard earlier about continuity of leadership.

It's not a criticism of individual administrators. It's the process that has broken down.

Representative SCHEUER. I would have to say in reaction to your comment that the problem lies more in the top leadership of the administration, the President, the Secretary of Transportation, than it does with the FAA. In my dealings with the FAA over this terminal Doppler radar system, to address the problem of wind shear—and I have dealt with them for a long time on that, they have been very professional and they have stuck to their guns and they have struggled against what must have been a very frustrating set of circumstances, when the top leader of the Transportation Department, reflecting the viewpoint of the administration, just refused to let them use the funds in the trust fund which they urgently and sincerely wanted to.

I respect their professionalism and I respect their desire to do the job. I think the problem came in echelons of leadership, political leadership, in the Department in which they were confined and in which they are situated, and the "no" signals from the White House. The White House has been saying "no" to any kind of funding of safety systems as well as assistance to make our airports more efficient. It's the White House that's the problem and secondarily the Transportation Department that's been following the lead of the White House I think, rather than the FAA.

Does anybody else want to address anything else? Does anybody else have a pet idea they think would move us forward?

Mr. MATHISON. Mr. Chairman, an area that I think we need to explore is more joint cooperation, joint task force or call it what you will, between the Federal Aviation Administration, the airports, and the airlines, in terms of how we use airspace and airports more effectively.

For example, here in the Washington area, if you include Andrews Air Force Base, you have four major airports. We can continue to add capacity to the airports, but if the airspace cannot handle that, we have gained little.

It is a very complex problem and we found over the past 2 years in which there was very massive planning work that there was no way of analyzing the impact of increased runways on the air traffic control system and vice versa. There are models to look at each of them separately, but not to tie them together. I think by coopera-

tive efforts, getting together and laying out the problem, some solutions will fall out on the table.

Representative SCHEUER. Well, I'm amazed to hear you say that there's never been a consideration of the whole when considering improving the parts. You obviously have a metropolitan system here with National, Dulles, BWI, and Andrews, and I would think it's just as obvious as the nose on your face that that has to be looked at as a system. And in failing to look at it as a system and making some changes in adjustments and scheduling, for example, it would cost comparatively little or nothing. You're giving up the chance to make major improvements in the utilization of facilities you have now. Wouldn't that be true?

Mr. MATHISON. I would rather not get into the scheduling issue but looking at it from the standpoint of air traffic control, the available airspace, and maximizing the use of that airspace. I think by laying out the entire picture and getting each of the players together, that we would find some solutions that we have not thought of before.

Representative SCHEUER. I just couldn't agree with you more and it seems mindboggling that that isn't being done.

Well, this has been a very, very provocative and thoughtful and interesting panel. The whole hearing has been absolutely wonderful and I wish more Members of Congress had had the opportunity to listen. It's late. The sun has long since risen over the yardarm, and I want to thank you for your patience and the excellence of your testimony. Thank you very much.

The hearing is adjourned.

[Whereupon, at 12:45 p.m., the committee adjourned, subject to the call of the Chair.]

[The following letter, together with an attached statement, was subsequently supplied for the record:]

November 2, 1987

Honorable Paul Sarbanes
Chairman
Joint Economic Committee
Room SDG-01
Senate Dirksen Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

On behalf of the Air Line Pilots Association, I respectfully request that the attached statement be included in the record for the hearing held by the Joint Committee on October 2, 1987. This hearing dealt with investment in the nation's airport and airways system.

If ALPA can be of any further assistance to you and the Joint Committee, please let me know.

Sincerely,

Paul Hallisay, Director
Legislative Affairs

PH:sk

AIR LINE PILOTS ASSOCIATION
1625 Massachusetts Avenue, N.W., Washington, D.C. 20036 (202) 797-4000
SCHEDULE WITH SAFETY AFFILIATED WITH AFL-CIO

STATEMENT

OF THE

AIR LINE PILOTS ASSOCIATION

TO THE

JOINT ECONOMIC COMMITTEE

CONCERNING

INVESTMENT IN THE NATION'S AIRPORTS AND AIRWAYS

Although airline pilots do not own, operate, or manage the airport and airway systems, we do, of course, have a profound interest in how both of these systems are operated. While the airport and airway systems are usually thought of as separate entities, they should be recognized as two parts of a tripartite aviation system. The third part is, of course, ATC procedures.

On the following pages, we have addressed the issues with which the Joint Economic Committee is concerning itself and have attempted to point out the necessity for aviation system planning.

LONG-RANGE PLANNING

The planning decisions made at the federal, state and local levels with regard to all facets of the airport system will directly impact the safety of our pilot members and the flying public. As the number of enplanements and aircraft operations grows, so too does the necessity for careful and intelligent long-range planning. On the airport side of the equation, one has only to look at recent aviation statistics to understand that there is a

serious, growing problem of airport under-capacity which is both manifesting itself today and will loom larger in the future. In 1986, 18 airports each exceeded 20,000 hours of aircraft delay. Between them, these airports handle 56 percent of the U.S. total enplanements. By 1996, 14 additional airports accounting for 68 percent of total enplanements handled, are expected to exceed 20,000 hours of aircraft delay.

It is interesting to note how fast air traffic has grown: in 1980, there were only about 315 million total enplanements by certificated carriers. In calendar year 1986, total enplaned passengers reached 418.5 million, an increase of 32.8 percent over 1980 and a 9.9 percent increase over the year previous. FAA estimates that in ten years, U.S. carriers will enplane nearly 700 million passengers which equates to an annual growth rate of 4.7 percent during that period.

What does this rapid historical and forecast growth portent for airport operators? Currently it means that, because of the lack of long-range planning for more facilities and equipment, airports are bursting at the seams in some locations, and underutilized at others. In the future, it could mean complete saturation of capacity. Solutions to this problem must be implemented immediately or we, as industry and government, will leave behind us a legacy of ineffectiveness and a system which will be increasingly unable to support the amount of air traffic which is desired by the public. These solutions will only be derived through meaningful dialogue between all users and suppliers of aviation facilities.

It is time for Congress to take a good hard look at the roles of all levels of government in supplying airport capacity. Currently, local governments develop

master plans for an individual airport facility. Some local governments also develop regional airport system plans which allocate resources to aid several airports contingent upon need. Regional planning can be effective, but specifics of allocation may create opposition from competing jurisdictions.

State plans are generally very long range and attempt to develop an airport system which provides air service to all parts of a particular state. In 1987, all 50 states have an aviation agency which carries out some type of airport planning.

At the federal level, FAA developed the National Airport System Plan in 1980 which was superseded in 1985 by the National Plan of Integrated Airport Systems (NPIAS). The NPIAS is an inventory of the type and costs of certain developments deemed appropriate for specific airports. While ALPA supports the NPIAS, which is a useful document for some planning purposes, it does not prioritize the developments, establish a timetable for their completion, or in any way bind the federal government to committing resources for a particular project. The NPIAS is essentially an update of the NASP and provides little indication of how a national system of airports will be developed.

We feel that this omission is symptomatic of the federal government's failure to recognize that it must take responsibility for development of a true national airport system plan which will accomplish, at a minimum, the following objectives:

1. Integrate, coordinate, and develop the airport, airspace, and airspace procedures improvements in concert with each other.

2. Recognize that the aviation system is a national resource which must be protected by Congress. Two logical analogies in support of this statement suggest themselves: one is development of the rail system across the U.S. during the 1800's; the other, more recently, is the development of the interstate highway system in the middle of this century. Both of these developments were completed only because Congress saw fit to protect them through the power of eminent domain. The Industry Task Force on Airport Capacity Improvement and Delay Reduction (a group established by the FAA) made recommendations to Congress on September 25, 1987, aimed at protecting U.S. airports from residential encroachment and hostility. The task force urged Congress to enact legislation that would encourage states to create Airport Environmental Protection Areas (AEPAs) around public airports and require a local environmental managing board for each AEPA. These boards would implement and enforce land use and noise mitigation measures. Other additional actions would further protect the airports from litigation arising from noise. ALPA endorses these concepts and urges Congress to expeditiously enact them.

The biggest constraint the aviation industry currently faces in achieving more capacity is the problem of noise. It will be many more years, probably well into the next century, before all Stage II (noisier) aircraft are phased out of the nation's commercial aircraft fleet, and even then, there may continue to be a noise problem because there is no single answer to the question, "How much noise is too much?" Evidence of this fact exists at one California airport where an all Stage III (quiet aircraft) fleet is operating, but community opposition continues to rise against aircraft operations. To get at the core of the problem, we must devise a way to protect our airport environment from residential and other non-

compatible use encroachment and litigation.

3. Provide adequate aviation resources for each state with more emphasis on airports which are deemed to have greater significance in the overall air transportation picture.

4. Assimilate planning efforts from the local and state levels to help national planners determine priorities and objectives.

5. Prioritize and adquately fund the projects which are determined necessary for the survival and improvement of the national aviation system using the best econometric modeling, forecasts of demographics, population growth predictions, and other data available.

On the subject of airspace system planning, the National Airspace System Plan (NAS Plan) was made public in 1981 as a charter for improving and modernizing air traffic control and airway facilities through the year 2000. The plan is updated annually with the most current edition being April, 1987. The NAS Plan was not done in concert with the NASP or NPIAS and subsequently is not totally synchronous with the objectives of existing airport planning, such as it is. Even so, the NAS Plan is not without merit and ALPA supports its funding and eventual completion. One major benefit which will accrue from NAS Plan implementation is replacement of existing ATC computer systems with new ones which will increase computing capacity and provide "conflict resolution." This function alerts controllers to potential conflict of aircraft and suggests actions to controllers for resolution of the situation. The new computers will also detect and track all aircraft equipped with altitude-reporting transponders and automatically alert the controller to possible conflicts with

instrument traffic.

Of course, new equipment is of no value without skilled personnel to maintain and operate it. Herein lies a well-known and troublesome problem: the shortage of air traffic control and maintenance personnel. We believe that significant problems still exist within ATC six years after the PATCO strike. Since the strike, the work force has been gradually rebuilt but still only had 9,670 full-performance level (FPL) controllers as of Septeber 30, 1987, compared with 13,000 FPL controllers prior to the strike. Exacerbating the situation has been an increase of air carrier operations from 1980 levels of 10.0 million to 1986 levels of 12 million. This increase of FAA workload can only be expected to worsen. Immediate-past Secretary of Transportation Elizabeth Dole announced on June 3 that she would hire 955 new controllers. While we are encouraged by this action, it is both too little and too late.

We believe that staffing levels of ATC facilities will continue to be a concern unless aggressive action is taken in three areas:

1. Limit air traffic to acceptable levels at each airport through flow control procedures.

2. Acquire more maintenance staffers.

3. Hire more controllers and move as expeditiously as possible towards a full complement of FPL controllers.

PUBLIC/PRIVATE COOPERATION

On the subject of defederalization or some other means to increase private funding of airport facilities, ALPA will not commit itself strongly to support or oppose it until there is more information upon which to examine the particular concept in the light of impact on aviation safety. Many scenarios can be envisioned which would serve the purpose of removing an airport from federal aid dependency. Much more difficult is the task of ascertaining that such a move is a wise one.

Some of the unanswered questions about adoption of a defederalization program would include:

1. Would the federal government allow a voluntary defederalization program, or would it be mandatory for certain classes of airports?

2. How would the federal government ensure that expenditures for non-mandatory safety-related improvements would not suffer?

3. Would the reduction of funds to the trust fund have a negative effect on those airports which would remain eligible for and dependent upon federal aid?

4. What, if any, impact on airport revenue stability might be attributable to the imposition of passenger facilitation charges by airports?

Any other type of funding policy besides defederalization would need to be examined and weighed on its own merits. ALPA cautions against adoption of any policy which could have the net effect of disrupting the measure of economic stability now enjoyed by airports. Accordingly, airport's ability to provide

safe facilities under any private sponsorship formula is of utmost concern to ALPA.

AVIATION TRUST FUND USE

ALPA's position with regards to the Airport and Airway Trust Fund has been well documented in several congressional hearings earlier this year, but we think it is important to reiterate it here and add some observations.

We are pleased that the House recently passed H.R. 2310 to reauthorize for five years the trust fund and its associated programs. It is our sincere hope that Congress will produce a final bill which provides a five-year authorization of full funding for all the vital aviation programs which are currently ongoing.

The main objective of the reauthorization language must be to improve the safety of the nation's airports and air traffic services. No other objective, including increased capacity, should take precedence over safety. Erosion of safety standards will ultimately lead to erosion of public confidence and ridership levels making capacity gain efforts a moot endeavor.

Any final version of reauthorization language must be for a duration of five years or longer. The maturation of the aviation industry has been hastened by technological advances which require several years to research, engineer, and implement. Indeed, a five-year timetable with which to plan a major new airport improvement or airway project is a short one. Too, government and industry alike need the continuity afforded by a longer reauthorization period.

Some of our recommendations regarding projects and improvements which should be

included in the final version of the trust fund authorization are listed below:

1. Better runway safety areas and visual aids at airports including new signs and lighting to prevent runway incursions. Also, all air carrier airport runways should be equipped with electronic and visual guidance and "distance remaining" signs.

2. Mandatory set-aside amounts for specific projects such as noise reduction, capacity increases, general aviation, etc., must not interfere with FAA's ability to provide flexibility in funding high priority projects.

3. Incentives should be provided to encourage airport operators to maintain pavements and runways. The previous trust fund authorization only made awards for new construction.

4. On the issue of allocations for noise control, more attention should be placed on eliminating operational restrictions and achieving noise reductions through technological improvements. Some airports are enacting operational restrictions which have little or no regard for safety.

5. Reauthorization of the trust fund must include more resources to make up the shortage of air traffic controllers, inspectors, and other vital FAA staffers necessary for the safety of the aviation industry.

Concerning the economic costs which will occur if the trust fund is not used to make improvements in our airports and airways, we trust that all members of Congress have the foresight to recognize that such negligence would imperil the

entire aviation industry, as has been pointed out above. Accordingly, ALPA supports the aviation industry effort to remove the trust fund from the federal budget process so that the funds which it collects can be promptly spent on those projects which will increase safety and provide more capacity. Aviation, perhaps more than any other mode of transportation, is dependent on the public's perception of safety. For that reason, aviation professionals working together with Congress, must never relent from tireless efforts to improve upon an already good safety record. To summarize, commercial aviation cannot remain the safest mode of transportation, and the United States the leader in this field, without resources to improve the airport and airways which serve commercial aircraft.

ECONOMIC CONSEQUENCES OF DECLINING AIRLINE SAFETY AND CONVENIENCE

The following attachment, "Deregulation and Safety: An Airline Pilot's Perspective," is a comprehensive study of the deregulation issues, and in our opinion, is pertinent for inclusion for the subcommittee's record.

JUNE 1987

ABSTRACT

DEREGULATION AND SAFETY: AN AIRLINE PILOT'S PERSPECTIVE

BY

JOHN E. O'BRIEN
Director
Engineering and Air Safety Department
Air Line Pilots Association

Since the deregulation of the U.S. airline industry in 1978, much has been said about its impact on the airlines, particularly on its economic effects. But less attention has been paid to another aspect of deregulation, one of greater significance to those who travel by air: how deregulation threatens aviation safety. This paper attempts to assess, from an airline pilot's perspective, the effects of deregulation on safety.

Pilots believe that the excellent safety record developed by our industry has been due to two reasons: on average, airlines have exceeded the minimum safety standards established by the Federal Aviation Administration (FAA), and, the FAA has had the resources necessary to inspect operations and enforce minimum standards where necessary. Pilots are also aware that the maintenance of this excellent safety record has had a direct financial impact on both industry and government.

Prior to the advent of deregulation, the costs of maintaining this excellent record were passed directly to the consumer through fare increases and aviation taxes. However, since deregulation not all operators are financially able to absorb the costs of exceeding the FAA minimum safety standards to the same degree they were prior to deregulation. To compound the problem, the FAA has not been provided the resources necessary for adequate inspection of the growing number of operators spawned by deregulation.

Other conditions have exacerbated the impact which deregulation has had on aviation safety. These conditions include the economic state of the nation during the late seventies and early eighties, the impact of the air traffic controllers' strike, and the impact of federal budget deficit reduction programs on certain federal agencies.

Therefore, we need to do more than look at records of fatal accidents in order to examine how significant the impact of deregulation has been on aviation safety. Trends in aviation safety can be determined by analyzing the vast amount of data collected by industry and government. Such analysis leads the author to the conclusion that exposure to risk has increased over the past eight years and, therefore, that safety has been impacted in a negative manner. A complementary conclusion is that this risk exposure can be reduced by one factor: the commitment of resources by the federal government to ensure that the FAA can provide the services operators need to succeed financially, and carry out its mandate of inspection and enforcement. The resources necessary to achieve these goals are available through the Aviation Trust Fund and must be used for that purpose.

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1. INTRODUCTION

1.1 Significance of the Impact of Deregulation on Aviation Safety

The airline industry is a service industry, so the success of the industry depends, to a significant degree, on the confidence the customer has in the industry. Deregulation has produced in many, though not all, markets an increase in customer demand for service, primarily through cheaper fares.

However, the competition which has produced these cheap fares has also drained the financial resources of many operators to the point where some have failed and others have merged with financially stronger operators. During this survival of the fittest or weeding-out process, some operators have not been able to maintain the necessary financial commitment to safety. When this lack of commitment to safety manifests itself in a public form, customer confidence is shaken and customers are less likely to utilize the services of that particular operator. Therefore, in spite of cheaper fares, if customer confidence in the industry were shaken by a perceived threat to safety, the industry as a whole would suffer.

This paper does not claim that deregulation has produced a threat to safety that will cause the industry to fail. However, the paper attempts to point out to what extent deregulation has had a negative impact on safety and what must be done before this threat becomes a greater debilitating force than it already is.

1.2 Historical Background

The legislative cornerstone for the development of commercial aviation in America was the Air Commerce Act of 1926. However, the entrance of many new airlines into the industry during the late twenties and early thirties, combined with the harsh economic climate of that era, produced excessive cutthroat competition and ostensibly resulted in airlines that were:

1) Operating obsolete aircraft,

2) Unwilling to invest in new aircraft,

3) Demonstrating questionable safety performance resulting from cost cutting,

4) Maintaining marginal operations with no growth; and

5) Easing in entrepreneurs with get-rich-quick schemes.

This situation led to the introduction of the McNary-Watres Air Mail Act of 1930, which gave Postmaster General Walter Brown dictatorial power over the airline industry. Brown felt the airline industry needed leadership to pull it out of the sorry state of affairs which existed in 1930 and Brown used his dictatorial power to circumvent the competitive bidding process in the award of airmail contracts. He also forced the merger and consolidation of a number of carriers. These actions helped to stabilize the financial conditions within the industry and went a long way toward improving the safety record of the operators. However, Brown's actions also produced many personal enemies, which resulted in his removal from office in 1934. The government also canceled all airmail contracts. Army pilots who had not flown commercial routes since 1927 began flying the mail again. In the first two weeks, five pilots were killed, seven were seriously injured, and eight aircraft -- none equipped with the equipment necessary for flying at night or in clouds -- were destroyed. Finally, after 66 crashes, 12 deaths, and a cost to the government of nearly $4 million in the three-month period the Army flew the mail, President Roosevelt ordered the Army to cease flying and asked Congress to provide adequate legislation for returning airmail to private companies.

Unfortunately, Congress's first attempt at a solution -- an interim piece of legislation passed in 1934 -- only made matters worse. It largely overlooked the question of what to do about passenger service and allowed those carriers whose contracts had been canceled to change simply their names and rebid for airmail routes. To make sure they continued getting government funds, the carriers bid ridiculously low, putting themselves in a position where they were subsequently forced to scramble for passenger business to make up their losses. Spencer, Frank A. (1941)

Of the aftermath, historian Henry Ladd Smith says, "The marvelous airline system, built with such pride, was so nearly wrecked that it took four years to repair the damage."

It didn't take Congress long to discover its mistake. In 1935, several lawmakers introduced legislation designating airlines as common carriers (rather than private contractors) and placing them under the aegis of a single government agency that would regulate all aspects of the business: routes, pricing, and safety. It was an idea that had first surfaced on Capitol Hill in 1929 but had drawn little support. This time, things were different.

The following year, the Roosevelt Administration took up the proposal and drafted legislation embodying the philosophy that airlines were a quasi-utility like other modes of public transportation, requiring government controls on entry, prices, etc., to achieve long-term stability. In June, 1938, after three months of debate, Congress agreed to this philosophy and passed the Civil Aeronautics Act of 1938, giving the airlines the economic charter they had been seeking and creating a new agency, the Civil Aeronautics Authority, to oversee them.

The regulatory authority of the act was the Civil Aeronautics Authority (a 1940 amendment changed the name to the Civil Aeronautics Board). Its mandate was to consider "in the public interest, and in accordance with the public convenience and necessity" the following objectives:

1. The encouragement and development of an air transportation system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, of the Postal Service, and of national defense.

2. The regulation of air transportation in such manner as to recognize and preserve the inherent advantages of, assure the highest degree of safety in, and foster sound economic conditions in such transportation and to improve the relations between and coordinate transportation by air carriers.

3. The promotion of adequate, economical, and efficient service by air carriers at reasonable charges, without unjust discrimination, undue preferences or advantages, or unfair or destructive competitive practices.

4. Competition to the extent necessary to assure the sound development of an air transportation system properly adapted to the needs of the foreign and domestic commerce of the United States, of the Postal Service, and of the national defense.

5. The promotion of safety in air commerce.

6. The promotion, encouragement, and development of civil aeronautics.

A report of the Federal Aviation Commission of 1935, which was a major influence on the 1938 act, recommended: "It should be the general policy to promote competition in the interest of improved service and technological development, while avoiding uneconomical paralleling of routes or duplication of facilities." Later on the same report states, "On the other hand, too much competition can be as bad as too little. To allow half a dozen airlines to eke out a hand-to-mouth existence where there is enough traffic to support one really first-class service and one alone would be a piece of folly." (emphasis mine). Kane, Robert M. and Vose, Allan D. (7th Edition)

Airline safety is expensive. Airlines have invested billions of dollars to achieve a level of safety which is the envy of the world. Fully-equipped training facilities for flight crews and aircraft mechanics, maintenance centers and overhaul bases, modern, high-performance aircraft, redundant on-board systems, crew proficiency monitoring, stringent work rules, etc., all come together to provide a margin of safety which is often taken for granted by today's air travelers.

What is this margin of safety? It is the difference between the minimum standards set by the FAA and the higher, self-imposed standards of the airlines which have been achieved in a cooperative effort by pilots and management. It is also the experience gained from millions of hours of working within the air traffic system -- pilots know what this system can do and they know its limitations.

It is also the strong commitment of airline management and pilots developed over many years to make safety the number one priority in airline operations. Pilots believe unequivocally that it is this commitment and the understanding we have with management that discourages corner-cutting in safety, attractive as it often might be to managements when they count the dollar cost. O'Donnell, John J. (1976)

With the adoption of the Airline Deregulation Act of 1978, critics claimed that the cornerstone of the system, which has allowed industry and government to develop jointly the safest transportation system in the world, was lost. The system that existed prior to deregulation produced financial stability which allowed investment in facilities, equipment, and personnel dedicated to exceeding the minimum safety standards established by the Federal Aviation Administration (FAA). In response to these critics, Administration spokesmen have repeatedly denied that deregulation has affected safety. They have stated confidently that the Deregulation Act of 1978 affected only economic regulations and the Civil Aeronautics Board (CAB) and that the responsibility of the FAA, which promulgates and enforces safety regulations, has not been touched by the act. This view has proven to be terribly naive. Duffy, Henry A. (1983)

The purpose of this paper is to examine the influence deregulation has had on the industry's ability to maintain its high safety standards. It will answer three questions:

- What are the factors that have influenced safety since the airline industry has been deregulated?
- How have these factors influenced safety?
- What should be done in order to maintain safety standards within the airline industry?

2. FACTORS INFLUENCING SAFETY UNDER AIRLINE DEREGULATION

Three factors need to be examined in order to gain a full appreciation of how deregulation has influenced safety. They are:

- The national economic climate and its effect on competition and the entrance of new operators
- The air traffic controllers' strike
- Federal budget deficit reduction programs.

2.1 Economic Climate, Competition, and New Operators

As 1979 drew to a close, it was apparent that the early 1980's were going to be a period of uncertainty for the industry. The cost of jet fuel in 1979 jumped from about 40 cents per gallon to almost 60 cents -- a 50 percent increase in a single year. Inflation, held under 10 percent for four straight years, surged to 13 percent, fueled by another boost in oil prices. Interest rates also started climbing (they had remained stable for most of 1978), hitting a peak of almost 16 percent in 1979.

Awash in profits from 1978, the airline industry didn't react quickly to these ominous trends. Under the goad of deregulation, carriers continued to expand, adding 11,000 more people to their payrolls in 1979 (the years 1975 to 1978 saw scheduled carriers hire some 39,000 people). At the same time, new airlines began to appear: Midway Airlines started service in November, 1979, followed a year later by New York Air. (In 1978, there were 150 certificated airlines; today we have over 500.)

A wave of mergers also got under way. North Central and Southern joined forces to become Republic; Pan American bought National. Tiger International merged with Seaboard, and Summa Corporation, owner of Hughes Airwest, decided to sell its airline holdings to Republic.

These changes in the ranks foretold sizable risks, as well as possible rewards, for an industry confronted with an unfamiliar operating environment. What wasn't evident, at least then, was how great the risks could be if outside factors, such as a downturn in the economy, upset the transition process. In 1982, the dangers were all too obvious. Economic conditions continued to worsen in 1980 -- aviation fuel costs jumped another 50 percent, inflation remained in double digits, and interest rates soared to 21 percent, a level previously thought impossible.

The airlines, however, still groped for an appropriate response to their problems. Employment remained steady at approximately 340,000 people; some carriers, such as Republic, continued to expand; and fare wars erupted in various markets as carriers jockeyed for position in the open marketplace created by deregulation.

The consequences were not long in coming. Although revenues continued rising as inflation bumped prices upward, the decline in profitability that began in 1979 turned into a flood of red ink in 1980, putting carriers in a highly vulnerable position as 1981 began. Braniff, for example, had operating losses of $107 million in 1980, prompting its board of directors to bring in a new chairman in January, 1981. Pan American, which spent all of 1980 trying to mesh its operation with National's, piled up losses of $130 million for the year and managed to show a net profit only by selling off its headquarters building in New York City.

As the bad news continued, it became increasingly apparent that the companies suffering were not U.S. airlines in general, but trunk carriers (now called majors) in particular, the very segment of the industry that some observers feared would crowd out smaller operators under deregulation.

Local service carriers (now called nationals) rang up operating profits of $129 million in 1979 and $167 million in 1980 -- a much different story from the performance of other carriers.

As 1983 was drawing to a close, the national economic picture was beginning to brighten. Many of the same adverse results of deregulation continued: airline failures, hostile takeovers, and a continued decline in profitability for some operators. However, with the improvement in the national economy, the demand for service provided by the airline industry increased dramatically.

The major airlines, such as American, Continental, and more recently United, Northwest and Delta, spurred on by this demand for service, began significant expansion programs. These programs required major acquisitions of new equipment and facilities, additional personnel, and, in some cases, mergers or takeovers of financially troubled operators. New local service or commuter operators appeared as well. However, many of these soon became affiliated with or became wholly-owned subsidiaries of major carriers. The improved national economic picture has not cured the airline industry's financial situation completely, as evidenced by the problems plaguing Eastern, Pan Am, Western, and others. According to an ABC News survey, there have been 160 airline failures since we entered the deregulated era, and 70 percent of those operators who were in business before 1978 are no longer operating.

2.2 1981 Air Traffic Controllers' Strike

On August 3, 1981, the Professional Air Traffic Controllers Organization (PATCO) declared a strike against the FAA. The strike resulted in the walkout of approximately 13,000 controllers. Although some of the strikers returned, about 11,400 controllers did not return and were subsequently dismissed. The actions by PATCO and the FAA response left the air traffic control (ATC) system with a significantly reduced air traffic capacity. According to the FAA, the post-strike ATC system was initially managed by about 4,669 nonstriking controllers, 3,291 team supervisors and control and management staff, 800 military controllers on detail, and about 1,000 newly hired personnel, which totals 9,760, compared to a 17,275 pre-strike work force. National Transportation Safety Board (1981)

Immediately after the strike, the FAA implemented the National Air Traffic Control Contingency Plan. This plan, which anticipated a controller strike or job action in 1981, was "to insure the FAA's ability to provide a safe and orderly operation of the air traffic control system with the available, qualified manpower." In practice, the plan limited ATC system capacity to 75 percent of that which existed prior to the strike and reduced schedules at 23 major airports by 50 percent. Although the methods for limiting the system capacity were refined, the principle did not change. In fact, no major capacity-limiting measure was changed until October, 1981. By early October, the percentage of scheduled commercial flights had increased from the original 75 percent to about 83 percent. General aviation and other nonscheduled IFR traffic increased in September. The increasing departure delays and observations by controllers that the traffic workload was becoming significantly heavier led to an October 6 announcement of a planned reduction of commercial flights to 78 percent by December 1, 1981.

Additionally, a General Aviation Reservation Program was announced to place restrictions on the number of general aviation flights in the ATC system. However, aside from the lack of controls to deal with the traffic increases in the system in September, the FAA's preparation for the operation of the ATC system proved to be operationally feasible during the immediate post-strike period. National Transportation Safety Board (1981)

By March, 1987, the total controller work force had grown to 14,900, of which 11,200 were operational controllers. However, this still does not match the 1981 pre-strike work force level of 17,275, which included 13,300 full performance level controllers (FPL).

There is one additional important factor to consider when attempting to analyze the ability of the present ATC system to handle demand as compared to the pre-strike system. A pre-strike FPL controller was qualified at all the sectors in an area of specialization, whereas an operational controller is one who is qualified at two or more sectors in an area of specialization. This situation produces a much less flexible work force than that which existed prior to the strike, and hence a work force and ATC facilities much less capable of responding to the dynamic demands brought about through deregulation.

The FAA is in the process of hiring additional air traffic controllers and plans to have a total work force of approximately 16,000 by the end of fiscal year (FY) 1986. This number will be supplemented by an additional 225 controllers during FY 1987. However, these numbers are still significantly below the level which existed during pre-strike 1981 of 17,225.

2.3 Federal Budget Deficit Reduction Programs

In the late 1960's, it became evident the growth of this dynamic industry was not being matched by adequate facilities. With the enactment of the Airport and Airway Development (ADAP) Act of 1970, the nation took a giant step toward achieving an efficient and safe airport and airway system. The act envisioned a ten-year program to be funded for five years, with a review in 1975.

Reflecting the role of aviation in the economy and the public benefits derived from safe and efficient operation, that landmark measure: (1) found the airport and airway system inadequate to meet the requirements of then current and projected growth in aviation; (2) declared that substantial expansion and improvement was required to meet the demands of interstate commerce, the postal service, and national defense; and (3) established an expanded program of federal matching grants to sponsors of airports serving commercial and general aviation. Moreover, the act established a system of user taxes paid into a trust fund to provide an assured, long-term source of funding.

On June 30, 1975, the authorizing legislation of 1973 (PL 93-44) expired. Federal funding for the nation's airports remained dormant until one year later when President Ford, on July 12, 1976, signed into law the Airport and Airway Development Act Amendments of 1976 (PL 94-353). This act reactivated the programs and ended the one-year drought, during which federal action on approval of new airport construction and development had come to a halt.

Congress saw the continued growth in air travel justifying further ADAP expansion. Other problems of particular concern were also noted at the time: (1) terminal congestion and delays; (2) operating restrictions due to noise-control efforts; (3) airport sponsors' inability to plan on federal support; and (4) dissatisfaction with the National Airport System Plan (NASP), a plan mandated by the 1970 act that provided a basis for orderly airport development.

This new legislation extended the programs under the act for a five-year period, fiscal 1976 through 1980. It also increased the federal share of matching grants to airports and shifted the grants formula to channel more aid to smaller airports. Again, virtually all the money authorized was from the Airport and Airways Trust Fund. About half the total authorization was designated for capital improvements at air carrier and general aviation airports. Special provisions permitted commitment of that money to previously unauthorized ones, such as the purchase of buffer land around airports for noise suppression and terminal development. U.S. House of Representatives (1981)

The balance of the money was authorized for FAA programs, such as the purchase of air navigation facilities and research and development; and, for the first time, the use of trust fund money for the maintenance of federally owned airway facilities and airports was permitted. Previously, these costs had been borne by the taxpayers.

After two years of bitter debate, the Airport and Airway Improvement Act of 1982 was signed. Among other things, the legislation implementing this act increased the tax provisions of the Aviation Trust Fund in order to provide sufficient financial resources to modernize the air traffic control system. The aviation industry reluctantly agreed to support these tax increases, only after the Administration agreed to increased funding levels for FY 1982 through FY 1987. Both industry and government agreed that the airport and airways system was in dire need of repair if demand for service was to be met and if safety was to be maintained at desired standards. Joint Committee on Taxation (1980)

However, during the mid-eighties, our government was faced with a huge budget deficit. To combat this deficit problem, the 1985 Balanced Budget and Emergency Control Act, better known as the Gramm-Rudman-Hollings Bill, was developed. Gramm-Rudman-Hollings sets fixed numerical limits on the federal budget deficit, starting at $171.9 BILLION in FY 1986 and declining steadily until a balanced budget is required in FY 1991. Neither the President's budget nor the congressional budget resolution may exceed these limits. A special procedure is provided, however, by which Congress and the President may suspend the Gramm-Rudman-Hollings limits in the event of a recession. To date, efforts to exempt the Aviation Trust Fund from the budget-balancing provisions of the Emergency Deficit Control Act have been fruitless, even though there is a $ 9 billion excess of assets over liabilities in the trust fund as of December 31, 1986. U.S. House of Representatives (1986) See Figure #1

AIRPORT AND AIRWAY TRUST FUND

Status as of December 31, 1986

	Current Month	Fiscal Year To Date
I. Balance - Beginning of Period	$8,793,808,680.52	$8,625,199,213.60
II. Receipts:		
A. Total Tax Receipts	217,724,000.00	732,139,000.00
B. Total Reimburse For Tax Refunds	2,494,550.00	2,494,550.00
C. Interest on Investments	418,753,651.47	419,836,342.10
Net Receipts	633,963,101.47	1,149,480,792.10
III. Expenditures:		
A. Federal Aviation Administration	372,536,870.55	719,425,094.26
B. NOAA Weather Services	7,250,000.00	7,250,000.00
C. Interest on Refund of Taxes	20.00	20.00
Total Expenditures	379,786,890.55	726,675,114.26
IV. Balance - End Of Period	9,048,004,891.44	9,048,004,891.44

Source: Treasury Department Chart

FIGURE 1

The essence of airline deregulation is economic in nature. Factors such as the general economic climate of the nation can affect how much influence deregulation itself may or may not have on the airline industry. Also, factors such as the air traffic controllers' strike can influence the effects of deregulation by limiting the ability of airline operators to expand or for new operators to enter the industry. Both of the aforementioned factors limited the full impact of deregulation on the industry, and thus, during the first six years of the deregulated era (1978-1983), it is very difficult to analyze the impact of deregulation on aviation safety. However, with the change in economic climate in the country and the relaxation of most restrictions imposed on the ATC system as a result of the controllers' strike, both occurring at about the same time, it is possible that unrestrained deregulation has had a much greater impact on aviation safety during the last three years (1984-1986). It is also possible that this impact has been magnified by the federal government's attempts to reduce the huge budget deficit through reduced budgetary commitments to some federal agencies.

3. THREAT TO AVIATION SAFETY

In order to gain a full appreciation of how deregulation has affected safety, we must first define safety. From a pilot's perspective, accidents are not a good indicator of how safe or unsafe the industry may be. Also, from a statistical point of view, accidents are not a good safety indicator because accidents occur too infrequently. However, this infrequency of occurrence does not mean all is well.

Too often situations have existed where there was good data that, if analyzed properly, could possibly have prevented an accident. The occurrence of near midair collisions in the air traffic control system is an example. During the controllers' strike, the FAA often used the number of reported near midair collisions as a system safety indicator. The Air Line Pilots Association (ALPA) disputed these figures on several occasions based on reports received by the ALPA Air Safety Department. It was not until a special investigation conducted by ABC News uncovered the fact that many near midair collision reports had been lost or misfiled by the FAA that the FAA changed its system safety indicator from reported near midair collisions to actual midair collisions, completely ignoring the fact that a large body of data collected by the agency indicated a growing safety problem. Then on August 31, 1986, a turbojetairliner and a single-engine general aviation aircraft collided over Los Angeles, killing 85 people; on January 15, 1987, another air carrier aircraft collided with a general aviation aircraft, this time near Salt Lake City, killing 10 people.

The point to this example is that even though no midair collision had occurred involving a scheduled air carrier aircraft since 1978, the number of near midair collisions reported to the FAA was much higher than originally thought and the number was increasing at an alarming rate. Therefore, the risk of a midair collision was indeed increasing.

Putting all this into a pilot's perspective, safety should be defined as exposure to risk. In the example just given, it can be argued that exposure to risk was increased with respect to midair collisions and, therefore, the system was not as safe as it could have been if this exposure to risk had been reduced.

Each of the factors described in Section 2 of this paper can have an influence on how deregulation affects exposure to risk for those utilizing or working in our air transportation system.

3.1 Risk Assessment - Economics, Competition, and New Entrants

Historically, the economic well-being of an airline has influenced decisions made concerning the commitment of resources to safety-related activities. An example of such influence can be found through an examination of Pan American during the late sixties through the early seventies, a time when this carrier was experiencing difficult economic conditions. After a series of accidents at Manila, Tahiti, Samoa, and Indonesia, all involving Boeing 707 aircraft and suspected pilot error, the FAA reviewed the Pan American pilot training program. This review found, among other things, that changes made in the training program in response to the economic conditions which confronted the airline had severely impaired the airline's ability to train pilots properly.

The national economy in the United States during the late seventies and early eighties certainly had a negative impact on the financial condition of many airlines. This economic climate and increased competition, which resulted directly from the ability to enter or leave existing markets easily and the appearance of many new industry entrants, were factors directly attributed to deregulation, and produced a severe financial strain on many operators. This financial strain did not produce a catastrophic failure in the safety regulatory system. There were, however, accidents, such as Air Florida at Washington, D.C., and Air Illinois at Carbondale, Illinois, which were obviously influenced by deregulation. Financial conditions, rapid expansion, and experience levels of personnel were listed as contributing factors in accident reports published by the National Transportation Safety Board following its investigation of these two accidents.

As previously stated, there has been no catastrophic failure. What the airline industry is facing is a slower, but potentially more serious, insidious erosion of the entire safety system, which started in 1978 and is continuing today. In a May, 1987, Department of Transportation (DOT) rulemaking action, the DOT's right to collect data for the FAA's use in allocating safety inspection resources was questioned by United Airlines. The DOT responded that the "FAA has found a relationship between a carrier's financial position and its safety record," thereby justifying this requirement.

The rationale is simple. Safety costs money, and price competition means that airline managers are being forced to make tough decisions on safety expenditures. All too often safety is losing out to cost-cutting -- not everywhere or every time, but enough to cause concern.

That doesn't mean that airlines necessarily are violating safety regulations, although willful violations by unscrupulous carriers appear to be on the rise. But that's only part of the problem.

Rapid expansion within our industry has diluted the overall experience level of the personnel who make decisions which affect safety. These decisions, which are made at the chief executive officer level and throughout other levels in the organization, may be very well intentioned. However, due to a lack of experienced management, these decisions may not turn out to be in the best interest of safety.

Carriers do not have to break the rules to make cost-saving safety cuts. To understand why, you must understand that most major airlines exceed FAA minimum standards. It is this extra safety margin, not the less stringent FAA minimums, that gives us our excellent safety record. Unfortunately, those extra safety margins are threatened by cost competition.

Cost-conscious managers shave a little bit here, a tad there, while the FAA offers its technically correct but misleading assurances that most airlines are operating within legal limits. Furthermore, these assurances are based on a limited ability to assess accurately what is really happening on the operators' properties. Cost-cutting continues, as evidenced by an April, 1987, announcement by Eastern Airlines that labor costs will be cut by $490 million this year. Two hundred and fifty-nine of the employees who will lose their jobs belong to the International Association of Machinists (IAM), the union which represents the mechanics for Eastern. This action comes after Eastern Airlines has been confronted with the largest fine ever imposed by the FAA on an airline. The fine was levied because of maintenance deficiencies on the airline. Duffy, Henry A. (1983)

The high demand for pilots caused by the growth of airlines shows no sign of abating. The Air Line Pilots Association expects pilot hiring at major, national, and regional airlines to add between 4,000 and 6,000 pilots to the work force per year for the rest of the decade.

Fewer military-trained pilots are being hired by the airlines. In 1980, nearly 83 percent of all airline pilots had had military flying experience, according to a study by the Congressional Research Service. Today only 40 percent are trained by the military. The overall decreasing supply of military pilots and the increasing demand for commercial airline pilots have hit the regional airlines hard. Regional airlines suffer a 30 to 50 percent turnover per year; 90 percent of them go to work for the major airlines.

The military and the commuter airlines together continue to supply a large share of the major airline pilot work force; however, they will not be able to meet the future demand. Airlines will have to look to general aviation, in-house airline training academies, and possibly foreign countries for additional pilots.

The competition between airlines as the pilot shortage worsens raises concerns about maintaining the qualification standards for new airline pilots. The average flight time of airline new-hires is holding steady at 3,000 hours. The amount of jet-flying time required by airlines, however, has gone from 2,300 hours of flight time in 1983 to 1,600 in 1984, and 800 in 1985. This is an obvious downward trend that ALPA is watching closely. The association has petitioned the FAA to upgrade licensing standards for Part 121 air transport pilot ratings and commercial licenses. ALPA also supports enhancing the efforts of 400 colleges and universities that now offer courses in aviation. This will help ensure that during times when demand for pilots is high and supply is low, the highest standards of education and professionalism are maintained for commercial airmen.

The situation among commuter airlines is even more critical. Three recent commuter air carrier accidents have heightened the National Transportation Safety Board's concern about several significant safety issues:

- On August 25, 1985, Bar Harbor Airlines Flight 1808, a Beech Model 99, crashed during an instrument landing system (ILS) approach to Auburn-Lewiston Airport, Auburn, Maine. The airplane struck trees at an elevation of 345 feet above mean sea level (msl) in a wings-level attitude 4,000 feet from the end of the runway threshold and 440 feet to the right of the extended runway centerline; all eight persons aboard were fatally injured.

- On September 23, 1985, Henson Airlines Flight 1517, a Beech 99, crashed during an ILS approach to Shenandoah Valley Airport, Weyers Cave, Virginia. The airplane struck trees at an elevation of 2,400 feet msl in a wings level attitude about six miles east of the airport; all 14 persons aboard were fatally injured.

- On March 13, 1986, Simmons Airlines Flight 1746, an Embraer 110P1, crashed during an ILS approach to Phelps Collins Airport, Alpena, Michigan. The airplane struck trees at an elevation of 725 feet msl in a wings-level attitude about 1.5 miles from the end of the runway threshold and about 300 feet to the left of the extended runway centerline; three of the nine airplane occupants were fatally injured.

In all three accidents, the pilots were relatively new to their positions in the cockpit. In the Henson and the Simmons accidents, the captains had been with the company for about a year and had been upgraded only recently to captain; both first officers had been with the company less than two months. In the Bar Harbor accident, the captain had been with the company for about 15 months, a captain for about one year, and in his position as captain of a Beech 99 for about three months; the first officer had joined the carrier only three months before the accident.

The Safety Board believes that the safe conduct of these three flights may have been compromised by a lack of coordination in the cockpit. Little time was devoted to cockpit coordination during training. In fact, most "training" occurred on the job. Consequently, compromises in the decision-making processes and in cockpit coordination may have been factors in all three accidents because of the limited experience of at least five of the six pilots.

The pilots who fly for these airlines are in a much better position than the FAA to observe firsthand the subtle changes that occur gradually over several months or years. It was these kinds of changes that were being reported to ALPA in the late seventies and early eighties that caused ALPA to establish a formal pilot reporting system so that safety reports could be collected and analyzed and appropriate action taken to correct problems before they resulted in a serious incident or accident. During 1986, ALPA received more than 1500 calls from pilots on the association's air safety reporting lines, resulting in the creation of 453 separate projects.

These projects dealt with items such as abuse to the minimum equipment list (MEL) concept. Although the list is called a minimum equipment list, implying a list of equipment that must operate, it is actually a list of items which can be inoperative for dispatch on revenue flights. In addition, the list is of airworthiness items only. Any airworthiness item that does not appear on the list is required for dispatch.

During the late seventies, the FAA took steps to control misuse of the MEL. Some airlines have been known to carry important MEL items for extended periods of time. To eliminate this abuse of the MEL, the FAA developed phrases for important items that forced the airline to make repairs promptly. Typical wording is, "The airline may continue the flight or series of flights, but shall not depart an airport where repairs or replacements can be made." In fact, the abuse may be worse today than ever before. Pilots are reporting an increasing number of items carried on the inoperative equipment list under the MEL concept. It has been reported that this condition exists because airlines have reduced their spare parts inventory and the number of mechanics employed, thereby reducing the number of airports where repairs can be made. Under these circumstances, some operators have interpreted the lack of spare parts or mechanics to allow them to dispatch an aircraft under the MEL concept. In the opinion of the pilots who are reporting these events, this is certainly an abuse of the MEL concept. These pilots also report that, in their opinion, the decisions to reduce spare parts inventory and mechanics are a direct result of cost-cutting measures brought about by the fierce competitive pressure resulting from the deregulated environment their employers must operate in today.

ALPA's position on the sensitive issue of air safety is normally developed through input from pilots who are volunteer workers in the association's air safety structure. In view of the conflicting statements originating from many segments of our industry, it became vitally important that we obtain the safety views of all our pilots so that ALPA could present the views of our membership as completely and accurately as possible. To accomplish this task in an unbiased, scientific manner, ALPA hired Fingerhut/Madison Opinion Research to conduct an air safety survey of ALPA members.

An analysis of responses to the survey indicates that the majority of ALPA members are very concerned about declining air safety; 43 percent said the adverse effect on deregulation on airline safety has been great; 53 percent said it has been "affected to some extent." Only three percent said it has been "not at all affected."

Among those who thought airline safety has declined with deregulation, a full 65 percent said that the decline is the result of "airline financial difficulties brought about by deregulation," while 12 percent blamed "decisions made by inexperienced airline managers."

In addition to the obvious problem areas identified in this survey, such as the risk of midair collisions and airport congestion, there were some surprises that may not be evident without a more detailed examination of the survey results. There was almost unanimous agreement among responding pilots about the gravity of some safety hazards; therefore, to some readers it might not seem significant that only 40 to 50 percent of those surveyed felt there was a problem in a given area. That, however, is not always the case.

For example, in a series of questions involving airline maintenance, approximately one half of all respondents noticed a decline in the maintenance or the airworthiness of the aircraft they were operating. Additionally, almost half of the respondents indicated that captains are sometimes pressured into accepting aircraft with an excessive number of deferred maintenance items and that aircraft are often passed through maintenance bases in spite of the fact that repairs required for inoperative items on the aircraft have been deferred for excessive lengths of time. If 10 to 15 percent had responded in this manner, it would have been a concern; however, with almost 50 percent of the responses indicating problems with airline maintenance, we truly have a serious problem confronting us.

We are, therefore, looking closely at ways to improve airline maintenance. This effort began at the ALPA Safety Forum held in July (see Air Line Pilot, September). One of the activities we are currently engaged in is a program to review the minimum equipment list (MEL) concept. In response to our urging and the FAA's own investigations, the FAA plans to publish a new advisory circular that is intended to prevent abuses of the MEL. The FAA is also considering possible rulemaking action to strengthen the application of the MEL concept. (It is interesting to note that problems like these caused pilots to band together more than 50 years ago to form the Air Line Pilots Association.)

Another area of the survey that produced some unexpected results concerned carry-on baggage. ALPA's Accident Survival Committee has been examining many aspects of this problem, ranging from the design of overhead storage bins to the influence that additional carry-on baggage can have on the accuracy of weight and balance calculations. While recognizing the potential problems associated with carry-on baggage, we did not expect that more than 80 percent of the respondents would feel that this is a safety hazard. Based on this clear indication of concern, the committee will expedite efforts to reduce hazards associated with carry-on baggage. Fingerhut/Madison Opinion Research (1986)

From a pilot's perspective, whenever operational, maintenance, or training procedures are changed in a manner that does not provide an equivalent level of safety, risk is increased. The aforementioned examples of changes, do not provide an equivalent level of safety.

3.2 Risk Assessment - Air Traffic Control System

The primary purpose of the ATC system is to provide safe separation between aircraft as they travel from point of departure to destination. During 1977, the FAA air traffic control centers handled 25,973,299 flights. The first few years of operation under a deregulated environment saw this number grow from 28,055,382 in 1978, to 29,909,712 in 1979, and to 30,061,372 in 1980. However, with the controllers' strike in 1981, the numbers dropped to 29,531,111 in 1981, and 27,854,842 in 1982. By 1984, most of the restrictions that had been placed on the system as a result of the controllers' strike had been removed, and the number of operations increased to 31,615,486, and further increased to 32,708,709 by 1985. See Figure #2

Meanwhile, the number of full performance level controllers dropped from a high of 13,300 to approximately 7,000 operational controllers in 1981 following the PATCO strike. This number has risen to approximately 11,000 operational controllers by the end of 1986. However, this leaves 11,000 operational controllers to handle almost 3,000,000 more flights per year than the 13,300 full performance level controllers handled in 1980.

It could be argued that this disparate increase in numbers alone might lead to increased exposure to risk for those using the ATC system. The problem has been further compounded, however, by the airlines' implementation of hub-and-spoke route structures. This concept has produced peak service demands at many airports, which have taxed the ATC system capability to the utmost.

The unfettered world of airline deregulation has bred huge corporate cat fights, of which, according to industry observers, there are likely to be only three or four survivors. Before deregulation, the now-defunct Civil Aeronautics Board assigned routes; now airlines are largely free to establish their own domestic routes. Cutthroat fare wars, scheduling wars, and route wars rule the day. If reality does not demand it, marketing does: To stay in the game, every airline must have a 4 p.m. flight to Chicago.

The Transportation Department, which receives more consumer complaints about late or canceled flights than about any other airline problem, has targeted the scheduling wars. The department zeroed in on Atlanta, where Eastern and Delta Air Lines dominate operations, and began an investigation of scheduling practices to determine whether airline schedules are overly optimistic about departure or arrival times.

At the urging of Transportation Secretary Elizabeth Hanford Dole, the FAA convened a series of scheduling meetings in Washington, D.C., during April, 1987, and attempted to persuade rival airlines operating at Atlanta, Chicago, Philadelphia, Dallas, and Newark to adjust flight times voluntarily.

The airlines, countering that the issue is too complicated to be solved by fixing schedules, went to the meetings reluctantly, gave up some flight times at some airports, and then left town after four days with the snarls at the two busiest airports -- Atlanta and Chicago -- still to be unraveled.

AIR TRAFFIC ACTIVITY
AT AIR ROUTE TRAFFIC CONTROL CENTERS
BY AVIATION CATEGORY

FISCAL YEARS 1979-1985

	Year	Total
Total IFR Aircraft Handled	1985	32,708.709
	1984	31,615,489
	1983	29,361,418
	1982	27,854,842
	1981	29,531,111
	1980	30,061,372
	1979	29,309,712

Source: Federal Aviation Administration Air Traffic Activity Reports Fiscal Year 1981 and Fiscal Year 1985

FIGURE 2

Airlines uniformly fault the FAA for not hiring and training new air traffic controllers quickly enough since President Reagan fired 11,400 controllers six years ago during an illegal strike.

"The strike was the largest disaster ever visited on any industry," said Clark Onstad, vice president of the Texas Air Corp., which has absorbed Eastern, Continental, People's Express and Frontier airlines. "A pledge was made to rebuild the air traffic control system, and that pledge has not been kept. In January and February, 1987," Onstad said, "Eastern experienced 5,984 delays from air traffic control, compared with 3,820 in the same period in 1986." Parker, Laura (1987)

Atlanta was one of the few airports that worked as a hub even before deregulation forced airlines to cluster their operations around a major airport. Today no airline can survive without a hub, a fact so familiar to the industry that the noun "hub" is now used as a verb. "Hubbing" geometrically increases the number of flights an airline can operate, which increases the number of passengers it can carry and reduces its costs.

The airlines say it is not as easy to spread out flights as the FAA would have the public believe. An airport hub, with planes coming and going in sequences, is timed as delicately as a ballet. Airlines believe passengers would not tolerate getting in at 7 o'clock and leaving at 9. A passenger wants to get off the plane, go next door, get on another plane, and leave. Spreading out schedules is also expensive, as Piedmont Airlines discovered when it adjusted its schedules in 1986 to reduce delays. Piedmont found that to fly a spread-out schedule, it needed four more planes, each costing $30 million.

After the scheduling meetings broke off in Washington, the FAA's review of the proposed summer schedules indicated that problems would still be faced in Atlanta. Between 10 and 11 a.m., there are 95 scheduled arrivals. The ATC system can handle 80. That means 15 will not get in on time. Parker, Laura (1987)

The result of more aircraft handled by fewer controllers, combined with an overall lower experience level both on the part of the personnel on the ground and in the air, has been a dramatic increase in the number of operational errors in the airspace surrounding the busy airports. An even more startling increase has occurred in the number of runway incursions and the number of near midair collisions.

On March 31, 1985, two Northwest Airlines DC-10's nearly collided at the Minneapolis-St. Paul International Airport, Minneapolis, Minnesota. One airplane, Flight 51, was taking off, having been cleared for takeoff by the local controller. The other airplane, Flight 65, was taxiing across the same runway after having been cleared to do so by the ground controller. The captain of Flight 51 averted a collision by lifting off below the recommended takeoff speeds. Because of poor braking conditions and limited space in which to stop, he had no alternative. Flight 51 lifted off and overflew Flight 65, reportedly clearing the other DC-10 by 50 to 75 feet. None of the 501 persons aboard the two airplanes were injured and neither airplane was damaged. National Transportation Safety Board (1986)

Because of the Minneapolis incident and the frequency and the potential severity of similar incidents, in July, 1985, the Safety Board initiated a special investigation of runway incursion incidents and accidents. The purpose of the special investigation was to investigate selected runway incursions to determine their underlying causes and to recommend appropriate remedial actions.

A memorandum dated March 7, 1986, from the FAA's Associate Administrator for Air Traffic to all air traffic managers, acknowledges that the runway incursion problem requires further action. The memorandum reports that although operational errors decreased significantly overall in 1985, surface operational errors in 1985 were up 32.5 percent over 1984 and the growth of terminal errors "continued to climb in 1986." The memorandum stated that 86 of 102 surface operational errors reports in 1985 were attributed to the local controller. Most instances reportedly involved situations where the local controller forgot what had previously been coordinated. In January, 1986, local controllers were held responsible for eight of the nine errors reported. The memorandum expressed the view that the key to the problem of surface operational errors is to devise methods that will aid the local controller in remembering traffic and to stress the importance of teamwork and coordination. National Transportation Safety Board (1986). On May 17, 1986, at Chicago O'Hare, a USAir DC-9 and an American Airlines B-727 were involved in an incident similar to the one at Minneapolis-St. Paul involving the two Northwest DC-10's.

According to FAA statistics, the number of operational errors in the terminal area continue to increase (292 in 1983, 388 in 1984, 411 in 1985, and almost 500 in 1986). Also, the number of runway incursions continues to grow (88 in 1982, 77 in 1984, 103 in 1985, and over 400 in 1986). No accidents or fatalities have been associated with these occurrences so, in the view of those who like to look at accidents as an indicator of how safe or unsafe our system is, we may take comfort in this situation. However, from a pilot's perspective, these numbers represent good statistical trend information, and the trend appears to indicate an increase in exposure to risk. Therefore, we feel that safety has been compromised. See Figure #3

Another indicator of risk exposure is the occurrence of near midair collisions. As stated in Section 3 of this paper, the FAA once used the rate of occurrence of near midair collisions as a system safety indicator. However, all that changed when it was proven that the FAA data collection and analysis methods for near midair collisions reports were faulty. The ALPA air safety survey referred to in Section 3.1 of this paper also addressed the problem of near midair collisions. Survey results show that approximately 70 percent of the responses indicated that near midair collisions were a severe problem and approximately 75 percent of the respondents said that ALPA should give high priority to development of an adequate collision avoidance system.

These responses were received prior to the midair collisions which occurred over Los Angeles and Salt Lake City in August, 1986, and January, 1987. These collisions proved that the risk indicator, in this case the rate of occurrence of near midair collisions (475 in 1983, 589 in 1984, 775 in 1985, and over 850 in 1986), was all too accurate. It also appears that, as long as the number of airplanes operating in the system continues to grow, the exposure to risk will also continue to grow. See Figure #3

NEAR MIDAIR COLLISIONS
OPERATIONAL ERRORS
PILOT DEVIATIONS
RUNWAY INCURSIONS

EVENT	1983	1984	1985	1986
Near Midair Collisions	475	589	777	839
Operational Errors:				
Terminal	292	388	411	443
Total	721	1885	1403	1207
Pilot Deviations	N/A	N/A	1818	2008
1/ Runway Incursions:				
Surface Operational Errors	88	77	103	115
Surface Pilot Deviations	N/A	N/A	N/A	400 2/
Total	88	77	103	515-2/

N/A = Not Available
1/ = Not including vehicle or other conflicts
2/ = Preliminary

Source: Federal Aviation Administration Office of Aviation Safety

FIGURE 3

3.3 Risk Assessment - Federal Budget Deficit and FAA Resources

On September 8 and 9, 1977, the House Government Activities and Transportation Subcommittee held hearings concerning the FAA's ability to cope with a deregulated U.S. airline industry.

While not responsible for deregulation legislation, the FAA is responsible for aviation safety matters and, therefore, the subcommittee became properly alarmed that what was being proposed in the Senate and by the House Subcommittee on Aviation could seriously degrade aviation safety if certain fundamental changes in the industry were to take place. The subcommittee posed certain questions:

- Are the Federal Air Regulations (FAR's), and the airline operating procedures required by them, stringent enough?
- Does the FAA have sufficient statutory and regulatory powers to ensure the continued high safety performance of air carriers?
- Does the FAA have sufficient inspector manpower to detect, in advance, changes in airline management and operating procedures that might create safety problems?

In reference to the FAA's assurance that regulatory reform would cause no safety problems, the chairman of the House subcommittee, Congressman John Burton declared to FAA Administrator Langhorne Bond, "You may be totally right, but I will bet you this. You have not done a study or your homework, and you really don't know whether you are right. That is our concern."

During the hearings, it became clear that the FAR's are minimum regulations, and ALPA President J. J. O'Donnell, among others, vigorously stressed that point. O'Donnell said, "The operating practices, training, and procedures for cockpit crews, cabin crews, and ground crews are developed by the manufacturers and airlines, although basically approved by the FAA, and substantially exceed the minimum requirements of FAA regulations in almost every case."

Proof of this fact was introduced by representatives of Western Airlines, who pointed out the gap between FAA requirements and the current acceptable level of experience at their airline. A typical Western captain earns that rank after 11 years and about 9,000 hours of WAL commercial jet flying time added to 2,400 to 5,000 hours acquired before hire by the company. The FAA requires only that a captain be 23 years old and have 1,500 hours of total flight time.

The subcommittee found three potential weaknesses in the FAA's current system of allowing individual airlines to write their own operations manuals and set their own standards:

"First, although FAA approves these documents, the air carrier or the manufacturer usually drafts them. The industry's role appears to be a dominant one. . . . If the air carriers' disposition toward safety worsens because of regulatory reform, this could become a major weakness.

"Second, FAA apparently has no legal authority to prevent significant changes in operating practices, which are specified in the training program and operations manual. These changes might have an impact on safety. Considering the changes in the airline industry which regulatory reform might cause, limited FAA regulatory power is totally undesirable. FAA must insure that what is nonenforceable is truly unimportant. . . .

"Third, a major weakness is caused by FAA's use of exemptions. . .or by its ability to exempt air carriers from provisions of their operations specifications or other regulatory company documents. In all cases, an equivalent level of safety is supposed to be provided. However, since exemption requests are not published in the Federal Register, the concerned public therefore is not notified and cannot comment on these requests. Currently, the only judge of whether an equivalent level of safety exists as guaranteed under the exemptions is FAA itself."

The subcommittee was also concerned with the concept of self-monitoring of safety standards by the airlines, a practice which has increased in recent years because of the steady decline in the number of Flight Standards Service field personnel. As Captain O'Donnell pointed out in his testimony, "FAA's mandate to supervise safe maintenance procedures has evolved into merely monitoring the airlines' maintenance logs."

A Western Airlines official, James L. Mitchell, supported O'Donnell's observations and described the FAA's surveillance over his airline's maintenance program as minimal. He pointed out that "the nitty-gritty, minute-by-minute, day-by-day monitoring of maintenance safety at Western Airlines is done by Western Airlines, not FAA." His view was confirmed by officials of United Airlines.

The subcommittee expressed concern that, if deregulation legislation were to permit easy entrance of new carriers into the marketplace, they may not all have the expertise to operate safely. "New entrants into the certificated air carrier market might be unwilling or unable to make the massive investments in safety-related programs made by existing carriers," the report stated. "An air carrier encounters substantial financial stress during its initial operating period that can affect its safety disposition and performance."

The lack of manpower within the FAA to monitor new entrants properly was also considered by the subcommittee. "If regulatory reform is implemented," the report said, "it is absolutely imperative that FAA, the Department of Transportation, and the Office of Management and Budget be prepared to commit adequate resources so that new entrants are rigorously subjected to certification and initial surveillance by FAA."

Increased competition between airlines under deregulation was also discussed by the legislators. It is probable that some existing carriers, under relaxed route entry and exit and increased freedom to set prices, "may start to 'cut corners' in safety-related areas," according to the subcommittee report. This concern was voiced by many witnesses, including the subcommittee chairman.

At one point Chairman Burton said, "I have this concern, which has been expressed by others. When you are in the marketplace, the most important thing for you to do is to keep that nut down. When you have to keep the nut down, then you have to cut somewhere. The easiest places to cut sometimes are the places that no one sees. You could drop off a mechanic if you had one extra. All of a sudden you might have one and one-half when you had three before. So the public wouldn't see that."

The growing commuter airline industry came in for its share of scrutiny by the subcommittee because the liberalization of route exiting would make it easier for commuters, operating in an essentially unregulated environment and under a less stringent set of regulations, to fill the void created by the withdrawal of the large carriers from certain routes. "What we're doing by giving the major carriers the right to abandon the routes," Chairman Burton said, "is to give the customers the right to have less safety." The subcommittee report added: "The lower safety record of the commuter airline industry apparently is the direct result of FAA regulatory inadequacies."

The subcommittee's findings, published in 1978, condemned the FAA for failing "to develop comprehensive plans to contend with safety problems that may be caused by the implementation of current proposals for regulatory reform. What plans have been developed by the FAA are incomplete and a direct result of the subcommittee's investigation." While it was recognized that the current level of safety in scheduled passenger air carrier transportation "was remarkably high," full credit did not belong to the FAA, in the subcommittee's opinion. "Since the FAA relies extensively on the air carrier industry for both standard-setting and monitoring, industry self-regulation is just as much responsible for the level of safety, if not more so," the committee concluded.

The FAA's issuance of exemptions to the FAR's that do not provide for public notice and comment "is a dangerous regulatory weakness which might be aggravated under regulatory reform," the report said. In fairness, the report noted that the agency "is currently considering a proposed rule that would provide for notice and public comment on requests for exemptions to FAR's."

In its list of recommendations, the subcommittee recommended that the FAA develop proper plans, expedite the above-mentioned rulemaking, increase its monitoring of new entrants as well as of existing carriers, and carry out proposed revisions in FAR Part 135 to "insure that commuter airline passengers are provided a level of safety equivalent to that provided air carrier passengers." In addition, "FAA should insure that it has clear regulatory power to prevent any modification in air carrier operational practices that might decrease aviation safety."

Exercising a privilege not often seen on Capitol Hill, Representative Burton appended supplemental views to the report which said in part: "One thing stands out clearly in the report: Airline deregulation will have an impact on safety, and FAA has done little to prepare for it. The subcommittee's investigation found an FAA reacting to criticism, responding to questions, and answering inquiries. What the subcommittee sought in vain was an FAA taking the initiative on the vital matter of public safety. Unfortunately, this report shows a degree of complacency and defensiveness which has inspired anything but confidence." Glines, C.V. (1978)

During the years which followed this congressional hearing and committee report, two primary factors prevented the potential impact of deregulation from falling squarely on the FAA, as forecast by the congressional committee. These were the two previously discussed factors: the depressed U.S. national economy and the air traffic controllers' strike in 1981, both preventing the industry expansion that was envisioned under deregulation. However, as the national economy improved and the ATC system regained more of its pre-strike capacity, the impact of deregulation on the FAA became much more obvious. Public and congressional interest was aroused after a series of accident and incident reports questioned the FAA's ability to inspect all operators adequately.

In response to the concerns of some that the recent growth of the air carrier industry had the potential to create safety problems, the Secretary of Transportation, on February 13, 1984, directed the Administrator of the FAA to conduct a nationwide inspection of the safety of the air transportation industry. U.S. Department of Transportation (1984)

On March 4, 1984, the Administrator responded to the Secretary's direction by initiating, through Notice 8000.246, a 90-day, two-phase National Air Transportation Inspection (NATI) program.

The following statements are taken from the FAA 1985 Memorandum on Evaluation of the NATI reports, which analyzed the results of the NATI inspection program.

> The Federal Aviation Act assigned to the Civil Aeronautics Board (CAB) broad economic authority over the air transportation industry, but some of this authority terminated with the passage of the Airline Deregulation Act of 1978. Deregulation brought about significant changes to the industry, which included an almost explosive growth in the number of applicants for air carrier certification for which the FAA is responsible. During the period from 1978 to January, 1984, however, the FAA's Aviation Standards Field Inspector staff diminished from 2,012 to less than 1,400, a decrease of more than 30 percent.
>
> The Act and regulatory requirements place certain continuing obligations on the management executives of Part 121 and Part 135 operators. Deregulation of the airline industry did not diminish management's obligation to comply with the FAR's and to provide the highest possible degree of aviation safety. However, deregulation brought an influx of new operators into the airline industry, each requiring considerable attention and time from the FAA aviation safety inspectors in the field. Time that was normally spent on routine inspection and surveillance of established operators had to be diverted to new operators or existing operators that had expanded the scope of their operations as permitted by deregulation. Therefore, the responsibility of the individual air carrier's management to monitor its own compliance with FAR's became more critical.

The analysis report went on to state that new operator certification and additional approval work for existing operators are on-demand efforts, often with short deadlines, which place increased workloads on the FAA field inspectors to meet deadlines requested by the operators. A review of Phase II inspection reports indicated that a number of operators permitted established programs to deteriorate as a result of their poor voluntary compliance attitudes-and insufficient FAA surveillance. In addition, many operators suffered from the appointment of management officials with inadequate or questionable airline management qualifications. The inspection team concluded from its review that operations and maintenance manuals with a wide variety of required related programs were presented for approval, then hurriedly and inappropriately approved. The improper compilation and approval of these manuals and programs have compounded the workloads for both air carrier officials and FAA inspectors.

The FAA report indicates that in the NATI Phase I, inspectors wrote more than 13,600 aviation inspection reports. A large percentage (20.5%) of these reports contained comments indicating noncompliance with the safety standards prescribed by the FAR's. Air carrier management is ultimately responsible for assuring compliance with the safety standards provided by the FAR's and other established good/safe operating practices, and therefore should be held accountable for the high rate of noncompliance.

Despite the apparent decrease in the quality of air carrier management, there also was an apparent deemphasis of FAA legal enforcement action. In a review of the FAA Enforcement Information Systems Codes Report of November 15, 1984, the number of times specific regulations were cited in enforcement actions initiated by Flight Standards decreased 20 percent from 1981 to the end of 1983. Preliminary data for 1984 indicate that there was an even more significant decrease during that year.

The same review showed that the total number of enforcement actions initiated by Flight Standards has decreased by 25 percent during the same period. Again, the 1984 data indicates a continuing decrease in the actions initiated by Flight Standards. Federal Aviation Administration (1985)

In late 1978, a complete rewriting of Part 135 required the FAA to recertify approximately 4,000 air taxi operators, including commuter operators. This recertification effort placed a heavy workload on the FAA's inspector force.

From 1978 to the present, the number of carriers certificated under FAR 121 increased from about 60 to about 150 (250%), which generated significant additional workloads for the assigned inspectors. As these events took shape, the FAA's inspection and surveillance activities were seriously degraded in number and quality.

Meanwhile, as stated previously, the FAA Aviation Standards field inspector staff decreased in size from 2,012 in 1978, to 1,332 by the end of 1983. A telephone discussion with the Airworthiness Unit Supervisor of a large General Aviation District Office (GADO) having considerable air carrier responsibility revealed that when a Principal Maintenance Inspector (PMI) retired in January, 1985, the remaining Principal Operations Inspector (POI) and PMI had, in addition to other assigned duties and responsibilities, certificate responsibility in his or her own specialty for 70 air taxi operators, including three commuters. The office averages 15 new air carrier certification actions per year. In 1977, the technical staff of this office, excluding supervisors, consisted of six Principal and five Journeyman Operations Inspectors, five Principal Airworthiness Inspectors, and one Avionics Principal Inspector. These examples are illustrative; many more could be set forth.

In many cases, the FAA Phase II in-depth inspection teams mentioned inadequate/decreased staffing and increasing workload as causes for many of the discrepancies found during the inspection. The team, both from the review and evaluation of the inspection reports and from the members' personal experience, concurred that inadequate staffing and increased workloads are causes for the high number of discrepancies associated with inadequate surveillance and certificate administration problems. The circumstances of the past six years appear to have combined to create a serious deficiency in the FAA's capability to monitor the health of existing carriers. Certificate administration and surveillance have both deteriorated in the face of an increased workload in both original certifications and additional approvals.

The analysis provided the following conclusions:

(1) The FAA inspector staffing is inadequate to accommodate overall responsiveness and responsible certificate administration, and for sufficient surveillance activity, to ensure the desired level of safety in air transportation.

(2) If not dealt with, this situation contains an increasing potential for further safety compromises in the future. Federal Aviation Administration (1985) See Figures #4 and #5. Note: The number of inspectors are authorized levels not actual number of employees on payroll.

The Allen Corporation Safety Inspection Program Review, conducted under contract to the FAA, also highlighted the problem of the inspectors' inability to complete work under unrealistically short deadlines and the admitted resulting compromise of standards under pressure. Allen Corporation of America (1985)

According to a limited NTSB report issued October [illegible], on the current rapid pilot turnover and the hiring of less experienced pilots in the commuter industry, a solution to problems related to inexperience could be to request commuter airlines to schedule flightcrews so that relatively inexperienced captains are teamed with experienced first officers and that inexperienced first officers be scheduled to fly only with senior captains.

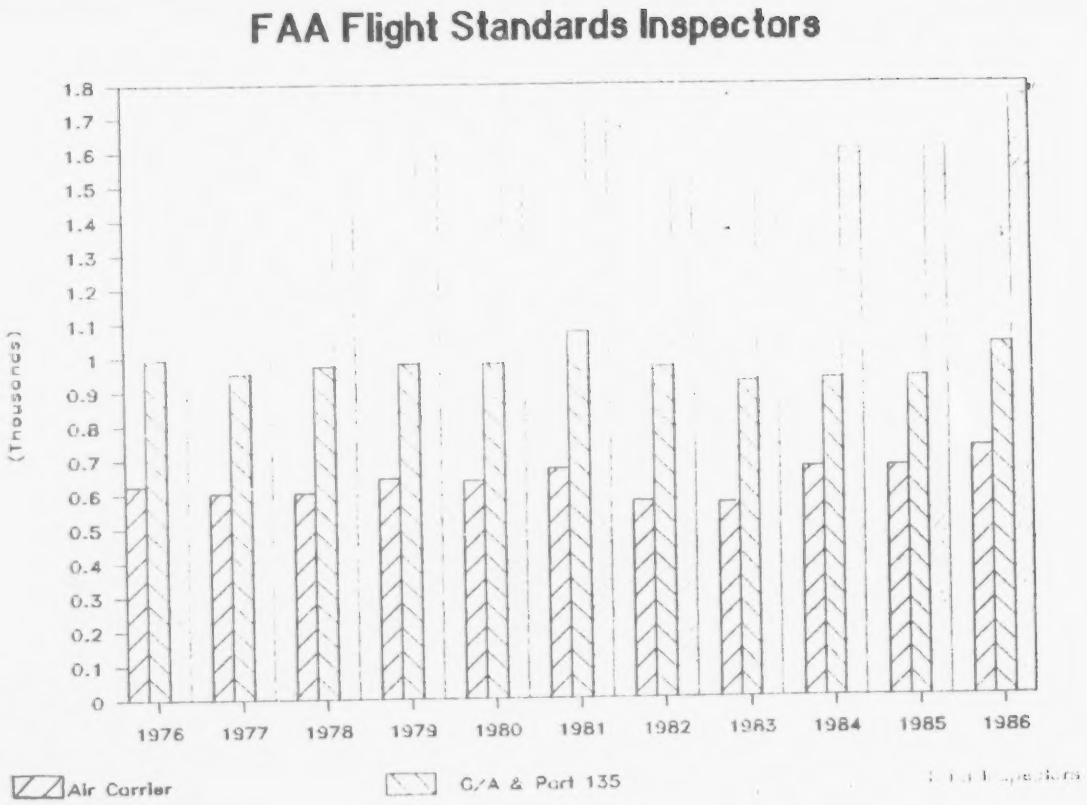

FIGURE 4

Source: Federal Aviation Administration Office of Program and Regulations Management

FIGURE 5

Federal Aviation Administration Office of Program and Regulations Management

The board believes, however, that the underlying problem with respect to pilot experience may be found in the FAA's check airman program and the agency's surveillance of that program. The Safety Board's findings of inadequate knowledge of standards for line flying among senior instructor pilots at Bar Harbor Airlines, the less-than-adequate instrument training methods used at Henson Airlines, and the sudden surge in checkride failures of pilots at Henson Airlines indicate inadequate training or compromises in the check airman program. The board's investigations of these accidents revealed that the POI at Henson Airlines had not monitored any Beech 99 checkrides for three months, and that the POI at Bar Harbor Airlines had not monitored any Beech 99 checkrides for at least five months. Therefore, the Safety Board believes that pilot training may have suffered due to the absence of FAA oversight of the check airman program and that this lack of oversight prevented the detection of the less-than-adequate pilot supervision in line flying and the failure of crewmembers to adhere to established procedures and company standards. The Safety Board believes that the FAA should strengthen its oversight of the check airman program and ensure that both training and check rides by designated check airmen are performed to the highest standards and in a standardized manner.

In all three accidents, the time available to the POI to maintain effective surveillance was severely curtailed. In the case of Henson and Simmons Airlines, the POI's had been occupied for a number of months with preparations for the addition of a new airplane to the airlines' fleets. The POI for Simmons estimated that more than 90 percent of her time was devoted to the new airplane. The POI for Bar Harbor Airlines testified that he did not have time to carry out his surveillance and inspection tasks effectively because of the increased workload associated with overseeing the operations of 20 other certificate holders.

Surveillance of the air carrier industry has been a longstanding concern of the Safety Board. Since 1978, the Safety Board has conducted 15 air carrier accident investigations in which deficiencies in FAA surveillance were cited. The board has maintained that a sufficient margin of safety in an air carrier operation can be achieved only through sustained and discerning surveillance by the FAA. In its 1980 special study on commuter airline safety, the Safety Board concluded that:

1. The FAA should have seen, from the ample evidence available before 1979, that the agency needed to strengthen its commuter surveillance programs.

2. The FAA has been slow to recognize that FAA inspector workloads and GADO staffing levels do not allow adequate surveillance of the commuter industry.

While the FAA has responded positively in many instances to numerous safety recommendations on the subject of surveillance, these three accidents are evidence that the same problems continue to exist.

The Safety Board has indicated approval of the latest efforts of the FAA to alleviate the surveillance problems of the commuter airline industry. The hiring of additional well-trained inspection personnel and the objectives of the FAA's Safety Activity Functional Evaluation (SAFE) program will assist in providing adequate surveillance. However, these measures, in many instances, are still in their infancy and consequently will require a period of time before they produce measurable benefits. The Safety Board has stated that the continued dynamic growth of the commuter industry and these latest accident findings warrant the development of more timely interim measures, procedures, and guidelines. The Safety Board has stated that a mimimum level of direct surveillance should be established in terms of periodic assistance visits, maintenance inspections, airplane checkrides, etc., to oversee commuter air carrier operations and that the required level number of personnel required to execute such a program should be identified for each Air Carrier District Office having oversight responsibilities of commuter air carriers. Additionally, guidelines should be developed and issued to provide for continued surveillance of commuter air carriers during periods when the POI is unable to perform these duties.

The current high demand for pilots, coupled with an increasing pilot shortage, will produce gains for experienced pilots who may want to shop around for the best salary before locking themselves into a long-term commitment. Massive retirements in the late 1980's should continue to modify or eliminate the B-scale for pilots and give new-hires a better chance of upward mobility and less chance of being furloughed.

The results of the special inspections undertaken by the FAA are verified by the day-to-day experiences of ALPA member pilots operating in the air transportation system. The ALPA air safety survey previously mentioned in this paper indicates that the number of full-service maintenance bases operated by the airlines had decreased in the past two years. Pilots responding to this survey indicated that aircraft often passed through maintenance bases and repairs were deferred for excessive lengths of time and that captains are sometimes pressured to accept aircraft with an excessive number of deferred maintenance items. They also noted a general decline in the maintenance or airworthiness of their aircraft and put the burden of responsibility for this situation on the "failure of government decisionmakers to provide FAA with the resources needed to carry out adequate inspections." Fingerhut/Madison Opinion Research (1986)

The decline in the FAA's inspection and enforcement capabilities is directly associated with a reduction in financial resource commitment by the Administration and Congress. This unwillingness to provide needed resources has caused personnel reductions and delayed needed improvements in FAA facilities and procedures.

The effects of this lack of commitment to provide necessary funds have been compounded by the Balanced Budget and Emergency Deficit Control Act of 1985. This act, which is directed toward reducing the present federal budget deficit, required a 4.3 percent across-the-board cut in the fiscal year (FY) 1986 budget for FAA. Obviously, mandatory budget cuts of this nature make it difficult to provide additional resources for the FAA. Therefore, the check and balance system of the FAA inspection and enforcement responsibilities has been severely impaired. Without an effective check and balance system, exposure to risk for passengers and crews has increased almost directly in proportion to the reduced effectiveness of the FAA to carry out its inspection and enforcement mandate.

4. SUMMARY

As previously stated, the purpose of this paper is to examine the influence deregulation has had on the industry's ability to maintain its high safety standards.

Historically, it has been proven that the financial health of an airline has a great influence on how safe that airline is. This historical precedent has been reaffirmed under the fierce competitive environment brought about through deregulation. This fact has been verified by a number of government and industry reports.

Deregulation has produced increased demands on the FAA to certificate new operators, to conduct inspections, and to take enforcement action where necessary. However, the FAA has not been provided the necessary resources which would enable the agency to respond to these demands. Also, the FAA's ability to provide ATC services for a very dynamic industry, an industry whose dynamic nature is driven both by deregulation and the economic climate of the country, has been seriously impaired by a lack of resources and the 1981 ATC controllers' strike.

There are many potential cures to this problem. Some people suggest various forms of reregulation. However, there is one common factor evident in almost all of the risk factors discussed in this paper. That factor involves the commitment of financial resources by the Administration and Congress to the FAA. This commitment, if properly fulfilled, would provide the FAA with the ability to inspect adequately all the facets of the aviation industry and, when necessary, take enforcement action so that financially troubled airlines would either meet their regulatory requirements or cease to operate. This commitment of financial resources would also give the FAA the ability to provide safer ATC system services through additional controllers and improved facilities.

The Administration and Congress can provide the necessary financial support to insure the safety of the passengers and pilots who use the air transportation system. In fact, they are legally bound to do so. The government has levied taxes on airline passengers, the airlines, and general aviation. These taxes were established to support the Airport and Airway Trust Fund. This trust fund, created in recognition of the role of aviation in the U.S. national economy and public benefits derived from a safe and efficient air transportation system, had a nine billion dollar surplus as of December 31, 1986. There is no conceivable reason why these funds should not be used for the purposes intended.

Earlier in this paper, safety was defined as exposure to risk. From a pilot's perspective, all of the previously mentioned factors have had an impact on safety because to some degree they have all produced incidents which have exposed pilots and passengers to greater risk. This risk exposure may be exhibited in changes to operational, maintenance, or training practices undertaken by financially strapped operators or by operators influenced by poor decision making on the part of inexperienced management or employees. This increased exposure to risk is also influenced by the FAA's limited ability to inspect adequately the growing number of operators. Without adequate inspection, questionable operational, maintenance, or training practices may go unchecked until a fatal accident occurs. Risk exposure has also increased as a result of the increased number of aircraft flying in the ATC system. This increase in risk is evidenced by the increase in runway incursions, pilot deviations, operational errors, and near midair collisions. Looking at this situation, only one conclusion can be reached. Pilots and passengers have been exposed to greater risk today than they would have been in a regulated airline industry, similar to that which existed prior to the Airline Deregulation Act of 1978.

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